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Editorial

The present issue of the Bonn zoological Bulletin contains some quite comprehensive contributions. In the first two papers, Volker Assing studies the taxonomy of Himalayan rove beetles, including a revision of the genus *Lathrobium*. In this paper, Assing recognizes 48 species of these small staphylinids between Kashmir and West Bengal, including 32 species new to science. This work sheds light on the value of taxonomic work for recognizing diversity in small insects, and the conspicuous correlation between species richness and collection activity highlights the importance of assessments and field explorations in remote areas. A total of 297 figures, a summarizing catalogue and an extensive key help making the results accessible. In his second paper in the present issue, Assing likewise focuses on staphylinid beetles in the Himalaya, here on the genus *Trisunius* in Nepal. He provides the first record of the genus for the country and adds the description of three new species, again including a key and distribution maps.

Mark Auliya and co-authors also contribute to the exploration of the fauna of a remote area. Their annotated check-list of the herpetofauna of the Bijagós archipelago (Guinea-Bissau, West Africa) provides several new records, and their check-list of the herpetofauna of the whole country of Guinea-Bissau sets a baseline for the recognition of anuran and reptile diversity in the area.

Two additional publications also come from the field of herpetology. Herbert Rösler et al. examined allopatric *Gekko vittatus* populations from Pacific islands that show distinct colour patterns, argue that one of these constitutes a new species, and formally describe a new taxon. Philipp Wagner et al. contribute an overview on expeditions and resulting collections of his namesake Moritz Wagner, an important German explorer of the 19th century. M. Wagner's collections contain substantial amounts of amphibians and reptiles, including type material; much of the material has recently been transferred to the collection of Museum Koenig. The present paper is the first one in a series of contributions summarizing the knowledge on M. Wagner's material, and provides a commented list of specimens valuable especially to museum curators and taxonomists. The portrait of an important new viper species collected by him and dedicated to him by two Swedish colleagues in 1984, also in BzB, constitutes the front cover image of this issue.

As usual, all pdfs are online free of charge at www.zoologicalbulletin.de. Migration of the archive to the new website is nearly completed – thanks to Sebastian Hüllen for his efforts!

Finally, I am delighted to welcome Till Töpfer as new board member. Till Töpfer is ornithologist with special interest in evolutionary avian biology and systematics. In his studies, he combines collection-based morphological approaches with molecular and geographic analyses. He has recently joined the ZFMK team as curator for ornithology. A warm "welcome on board"!

With best wishes for the New Year to all readers, authors, referees and "BzB-team" members,

Fabian Herder

Fabian Herder (Editor-in-Chief, Fish Curator at ZFMK)
Bonn, December 2012

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A revision of the *Lathrobium* species of the Himalaya (Coleoptera: Staphylinidae: Paederinae)

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Abstract. In all, 48 named *Lathrobium* species, all of them micropterous, microphthalmous, and locally endemic, are recognised in the Himalaya, among them 32 species new to science: *L. aciforme* sp. n. (C-Nepal), *L. annapurnense* sp. n. (C-Nepal), *L. apalatum* sp. n. (C-Nepal), *L. attritum* sp. n. (C-Nepal), *L. barbatum* sp. n. (C-Nepal), *L. barbulatum* sp. n. (C-Nepal), *L. bibarbatum* sp. n. (NE-Nepal), *L. calcaratum* sp. n. (C-Nepal), *L. cavicrus* sp. n. (C-Nepal), *L. compressicrus* sp. n. (C-Nepal), *L. compressum* sp. n. (C-Neapl), *L. curvum* sp. n. (C-Nepal), *L. diremptum* sp. n. (NE-Nepal), *L. discissum* sp. n. (N-India; E-Nepal), *L. excisum* sp. n. (E-Nepal), *L. exsertum* sp. n. (C-Nepal), *L. fodens* sp. n. (W-Nepal), *L. ignoratum* sp. n. (C-Nepal), *L. inexcisum* sp. n. (NE-Nepal), *L. infractum* sp. n. (E-Nepal), *L. kleebergi* sp. n. (E-Nepal), *L. lamjunense* sp. n. (C-Nepal), *L. milkeense* sp. n. (E-Nepal), *L. muguicum* sp. n. (NW-Nepal), *L. palatum* sp. n. (C-Nepal), *L. planissimum* sp. n. (W-Nepal), *L. privum* sp. n. (W-Nepal), *L. rupinaicum* sp. n. (C-Nepal), *L. separatum* sp. n. (N-India), *L. spiculatum* sp. n. (C-Nepal), *L. spinosissimum* sp. n. (C-Nepal), *L. umbhakense* sp. n. (NE-Nepal). The external and sexual characters of all the species are described and illustrated. One genus-group and two species-group synonymies are proposed: *Lathrobium* Gravenhorst, 1802 = *Glyptomerodoschema* Scheerpeltz, 1976, syn. n.; *Lathrobium lassallei* Coiffait, 1981 = *L. sherpa* Coiffait, 1982, syn. n.; *L. emodense* Coiffait, 1975 = *L. goropanense* Coiffait, 1983, syn. n. *Medon jaljalensis* (Coiffait, 1984) comb. n. is transferred from *Lathrobium* to the subtribe Medonina, redescribed, and illustrated. The Himalayan *Lathrobium* species are most unlikely to form a monophylum. Ten species groups are identified and characterised. In the Himalaya, *Lathrobium* species have been recorded only from the region between Kashmir in the west and Darjeeling (West Bengal) in the east. The altitudes range from 2400 to 5000 m. Most species have become known from central Nepal (25 species) and eastern Nepal (14 species), probably because collecting activity was highest in these regions. The distributions of the individual species and of the species groups are mapped. A catalogue and a key to the Himalayan *Lathrobium* species are provided.

Key words. Taxonomy, rove beetles, *Lathrobium*, *Medon*, Himalaya, Nepal, India, new species, new synonymies, new combination, key to species, catalogue, diversity, vertical distribution

INTRODUCTION

The speciose paederine genus *Lathrobium* Gravenhorst, 1802 is represented in the Palaearctic region by approximately 350 described species in three subgenera (Assing 2010b; Smetana 2004; Schülke unpubl.). However, new species are being described every year, particularly from China and Japan, suggesting that the known inventory of the East Palaearctic *Lathrobium* fauna is far from complete. An accurate estimate of total species number is difficult, since numerous species from regions other than the Palaearctic have not been revised and may belong to other genera of Lathrobiina.

The available biogeographic data suggest that the genus has a Holarctic distribution. In the East Palaearctic, its range extends to Taiwan in the southeast, where the *Lathrobium* species are confined to high-altitude habitats (Assing 2010b). In India, the genus is known only from high-altitude habitats in the Himalaya. All the species previously recorded from India (including Sri Lanka) and Myanmar as *Lathrobium* by Cameron (1931) refer to *Lobrathium* Mulsant & Rey, 1878, *Pseudolathra* Casey, 1905, *Tetartopeus* Czwalina, 1888, or *Pseudobium* Mulsant & Rey, 1878 (Assing 2012a–d, in press).

Twenty-one species in two subgenera had previously been recorded from the Himalaya (Coiffait 1975, 1981, 1982a, b, 1983, 1984, 1987; Scheerpeltz 1976; Smetana 2004); one of them is the type species of the monotypical subgenus *Glyptomerodoschema* Scheerpeltz, 1976. Coiffait (1982b) provided a key to the 21 Himalayan *Lathrobium* species known to him at that time, but this key included several species of *Lobrathium*, as well as one of unknown generic and subtribal affiliations (Assing in prep.). A revision of the Himalayan *Lathrobium* species has never been attempted.

Unlike other lathrobiine genera such as *Lobrathium*, *Pseudolathra*, and *Pseudobium*, *Lathrobium* species and/or species groups are often distinguished also by the female secondary sexual characters (Assing 2010b, 2012a). The morphology of the female sternite VIII and the female tergite IX are of particular taxonomic significance. The female sexual characters of Himalayan *Lathrobium* species were previously unknown.

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While in the West Palaearctic region a considerable proportion of the species is either macropterous or wing-dimorphic, more or less wide-spread, and often found at low elevations, the vast majoritiy of species in the East Palaearctic is micropterous and more or less locally endemic to individual mountain ranges. This is particularly true of the fauna of regions such as the Himalaya, China, and Japan. Not a single winged true *Lathrobium* species has been recorded from the Himalaya.

The present study was inspired primarily by material made available to me by Benedikt Feldmann (Münster) and Andreas Kleeberg (Berlin). In order to identify the species represented in this material, types had to be examined. Eventually, the type material of all the species described from the Himalaya and additional material from various public and private collections were studied, yielding an unexpected number of undescribed species, as well as several new synonymies and new combinations.

MATERIAL AND METHODS

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). A digital camera (Nikon Coolpix 995) was used for the photographs.

Head length was measured from the anterior margin of the frons to the posterior margin of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

The maps were created using MapCreator 2.0 (primap) software. The coordinates of some localities were obtained from Ahrens (2004).

COLLECTION MATERIAL DEPOSITORIES

FSF	Forschungsinstitut Senckenberg, Frankfurt, Germany (A. Hastenpflug-Vesmanis)
MHNG	Muséum d'Histoire naturelle, Genève, Switzerland (G. Cuccodoro)
MNHNP	Muséum national d'Histoire naturelle, Paris, France (A. Taghavian)
NHMW	Naturhistorisches Museum Wien, Austria (H. Schillhammer)
NME	Naturkundemuseum Erfurt, Germany (M. Hartmann, assisted by W. Apfel)
SDEI	Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany (L. Behne)
SMNS	Staatliches Museum für Naturkunde Stuttgart, Germany (W. Schawaller, K. Wolf-Schwenninger)
SNSD	Senckenberg Naturkundliche Sammlungen Dresden, Germany (O. Jäger)
ZII	Zoologisches Institut Innsbruck, Austria (W. Schedl)
cAss	author´s private collection
cFel	private collection Benedikt Feldmann, Münster, Germany
cKle	private collection Andreas Kleeberg, Berlin, Germany
cSme	private collection Aleš Smetana, Ottawa, Canada

RESULTS

Taxonomic changes. The revision yielded three new synonymies of genus-group and species-group names. The subgeneric name *Glyptomerodoschema* Scheerpeltz, 1976 is placed in synonymy with *Lathrobium* Gravenhorst, 1802. In the two cases of species-group synonymy, the junior synonym (*L. sherpa* Coiffait, 1982, *L. goropanense* Coiffait, 1983) had been described from the same locality as the senior name (*L. lassallei* Coiffait, 1981 and *L. emodense* Coiffait, 1975, respectively) by the same author, and the male sexual characters of either the junior (*L. sherpa*) or the senior synonym (*L. emodense*) had been unknown.

The type series of three previously described species (*L. nepalense* Coiffait, 1975, *L. franzi* Coiffait, 1975, *L. nepalorientis* Coiffait, 1984) are composed of specimens of at least two species. The paratypes that had erroneously been assumed to be conspecific with the holotype were either females or had been mis-sexed as females.

Lathrobium jaljalense Coiffait, 1984 is transferred to the genus *Medon* Stephens of the subtribe Medonina. Another species originally described in *Lathrobium*, *L. perpusillum* Coiffait, 1982, belongs to a genus of Medonina, too; it will be treated elsewhere (Assing 2012d). Both species had erroneously been attributed to *Lathrobium* probably because of their faint resemblance in colour and body shape with small *Lathrobium* species.

In all, 32 *Lathrobium* species are newly described, 30 of them from Nepal, one from West Bengal (India), and one from eastern Nepal and West Bengal.

Species groups. The Himalayan *Lathrobium* species are most unlikely to represent a monophyletic group. Primarily based on the male and female sexual characters, but also on external characters, ten species groups are identified.

The most speciose group, the *L. nepalense* group, is distributed in central and eastern Nepal (Figs 2–3) and includes 15 species (*L. bibarbatum* sp. n., *L. compressum* sp. n., *L. diremptum* sp. n., *L. exsertum* sp. n., *L. ignora-*

tum sp. n., *L. inexcisum* sp. n., *L. infractum* sp. n., *L. janetscheki* Scheerpeltz, 1976, *L. khumbuense* Coiffat, 1982, *L. kleebergi* sp. n., *L. lassallei*, *L. milkeense* sp. n., *L. nepalense*, *L. nepalorientis*, *L. umbhakense* sp. n.). Species of this group are characterised by usually dark coloration, small to moderately large body size, moderately small eyes composed of approximately 20–30 ommatidia, a relatively weakly oblong (approximately 1.15 times as long as broad) and – in cross-section – strongly convex pronotum with more or less pronounced microsculpture (e.g., Figs 5, 18, 28, 43), a male sternite VII with or without weakly modified pubescence (e.g. Figs 6, 11, 19, 23, 29, 35, 39), the shape of the male sternite VIII (posterior margin with or without very small median excision, as in Figs 7, 12–13, 20, 24, sometimes even convex in the middle, as in Figs 30, 66), a distinctly sclerotised aedeagus with a lamellate dorsal plate (e.g., Figs 8, 14–15, 21, 25–26), and the presence of micropubescence in the posterior portion of the female sternite VIII (e.g. Figs 10, 16–17, 22, 28). In addition, the female tergite IX is separated by a narrow membranous suture in the middle in most species.

The *L. muguicum* group includes only one species from northwestern Nepal (Fig. 96), *L. muguicum* sp. n. It is somewhat similar to the species of the *L. nepalense* group, but has slightly larger eyes (composed of approximately 30 ommatidia), a slightly more slender and less convex pronotum without microsculpture (Fig. 87), a distinctly V-shaped posterior excision of the male sternite VIII (Fig. 89), and a different morphology of the aedeagus (dorso-ventrally flattened ventral process, lamellate dorsal plate, internal sac with long membranous tube, but without sclerotised structures) (Figs 90–91).

The *L. emodense* group comprises four species from central Nepal (Fig. 96): *L. annapurnense* sp. n., *L. emodense*, *L. curvum* sp. n., and *L. spinosissimum* sp. n. They are characterised by relatively small body size, reddish to dark-brown coloration, moderately small eyes composed of approximately 20–25 ommatidia, the presence of modified setae on the male sternite VIII (Figs 93, 99, 104, 109) and often also on sternite VII (Figs 92, 98), the shape of the male sternite VIII (posterior margin sometimes pointed on either side of the median excision, as in Figs 93, 104), the morphology of the aedeagus (dorsal plate apically at least weakly hooked, long, and stout, not lamellate; ventral process not flat; internal structures with sclerotised internal structures) (Figs 94, 100, 105), and an anteriorly undivided female tergite IX.

The *L. excisum* group includes only a single species, *L. excisum* sp. n. from eastern Nepal (Fig. 96). It is similar to the species of the *L. emodense* group, but distinguished primarily by aedeagal characters (dorsal plate lamellate; internal structures without sclerotised spines, as in Figs 115–116).

The *L. deuvei* group is represented by eight species from western and central Nepal (Fig. 126), all of them confined to high-altitude habitats above 4000 m: *L. aciforme*, *L. apalatum* sp. n., *L. barthei* Coiffait, 1987, *L. deuvei* Coiffait, 1981, *L. ganeshense* Coiffait, 1983, *L. lamjunense* sp. n., *L. palatum* sp. n., *L. rupinaicum* sp. n. The species of this group are characterised by moderately large to large body size (length of forebody > 3.0 mm), conspicuously slender habitus with relatively long legs and antennae, minute eyes composed of very few ommatidia, a strongly transverse and posteriorly excavate male sternite VII (e.g., Figs 127, 132), a distinctly transverse male sternite VIII with a deep (exception: *L. ganeshense*) and broadly V-shaped posterior excision and mostly with conspicuous fringes or cluster of dense dark setae (e.g., Figs 128, 133), a relatively large (1.3–2.0 mm) aedeagus with a long, strongly sclerotised, and apically acute ventral process, with a dorsal plate composed of a lamellate basal portion and a distinctly sclerotised (not lamellate), apically hooked apical portion, and with long, slender, distinctly sclerotised internal structures (e.g., Figs 129, 134–135); the female sternite VIII is often strongly produced posteriorly (e.g., Fig. 136).

The *L. gladiator* group includes only a single species, *L. gladiator* from Kashmir, and is characterised by a posteriorly laterally compressed, strongly bulging female tergite X (Figs 123–124), an aedeagus with a long and strongly sclerotised ventral process, with a dorsal plate composed of a lamellate basal and a strongly sclerotised apical portion (Figs 120–121), a strongly transverse male sternite VII with an extensive cluster of modified setae (Fig. 118), and by the shape of the male sternite VIII (posterior margin produced on either side of the posterior excision) (Fig. 119).

The *L. discissum* group is represented by two described (and one undescribed) species from West Bengal (North India) and the extreme east of Nepal (Figs 3, 126): *L. discissum* sp. n. and *L. separatum* sp. n. It is distinguished from other species groups particularly by the structure of the female tergite IX (Fig. 174), which is divided into two hemi-tergites, so that the anterior margin of tergite X almost reaches the anterior margin of tergite IX (unique among Himalayan *Lathrobium*), and also by the morphology of the aedeagus (ventral process apically narrowly truncate in ventral view; dorsal plate reduced; internal sac with membranous tube, but without sclerotised spines; see Figs 171–172, 178–179) and by the unmodified pubescence of the male sternites VII and VIII (Figs 176–177, 169–170).

The *L. jumlense* group includes three species from western Nepal (Fig. 96), *L. jumlense* Coiffait, 1982, *L. inustum* Coiffait, 1982, and *L. planissimum* sp. n., which are characterised by small body size, uniformly reddish coloration, a conspicuously small (< 0.7 mm), weakly sclerotised, and – in ventral view – broad aedeagus (Figs

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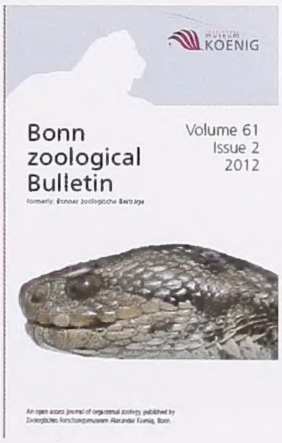
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184–185, 191–192), unmodified pubescence of the male sternites VII and VIII (Figs 182–183, 189–190), and a symmetric posterior excision of the male sternite VIII.

The two species of the *L. aculeatum* group, *L. aculeatum* Coiffait, 1982 and *L. spiculatum* sp. n., are distributed in central Nepal (Fig. 96). They are similar to the species of the *L. jumlense* group, but distinguished by a long (>1.0 mm) and slender aedeagus with a conspicuously long and thin, needle-shaped ventral process (Figs 196–197, 203–212), and a somewhat asymmetric posterior excision of the male sternite VIII (Figs 195, 202).

The speciose *L. pectinatum* group includes eleven species from central and eastern Nepal (Fig. 214): *L. attritum* sp. n., *L. barbatum* sp. n., *L. barbulatum* sp. n., *L. calcaratum*, *L. cassagnaui* Coiffait, 1982, *L. cavicrus* sp. n., *L. compressicrus* sp. n., *L. fodens* sp. n., *L. franzi* Coiffait, 1975, *L. pectinatum* Coiffait, 1981, *L. privum* sp. n. They are readily distinguished from all other Himalayan species groups by the presence of one or more transverse rows of pectinate setae on the male sternite VII (e.g., Figs 215, 219), undoubtedly a synapomorphy constituting the monophyly of this species group. The males of some species, in some cases even the females, have conspicuously modified metafemora, mesotibiae, and/or metatibiae (Figs 225, 230, 237, 244, 251).

Diversity and biogeography. In all, 48 described species of *Lathrobium* are now known from the Himalaya. The westernmost representative is from Kashmir, the easternmost species from Darjeeling district in West Bengal, northern India. The region with the highest diversity of described species is central Nepal (25 species), followed by eastern Nepal (14 species) and western Nepal (seven species). Only three species are known from northern India, one from Kashmir and two from Darjeeling district in West Bengal. These figures, however, are probably strongly biased as a result of the different collecting activity in these regions. As far as the Staphylinidae is concerned, central Nepal is without doubt the most frequently visited and best studied region in the Himalaya. Not a single species has been recorded from the Himalaya east of West Bengal, a poorly studied region from which only very little material of Staphylinidae has become available. There is no evidence suggesting that the *Lathrobium* fauna of the eastern Himalaya should be any less diverse than that of Nepal. Moreover, the only *Lathrobium* species known from the western Himalaya west of Nepal is *L. gladiator* from Kashmir. Not a single species has been recorded from the region between the type locality of *L. gladiator* and Nepal, a distance of nearly 800 km!

Without exception, all the currently known Himalayan *Lathrobium* species are micropterous, microphthalmous, and locally endemic. Many of them are known only from a single locality. Interestingly, the species groups have rather restricted distributions, too. None of the ten species groups (see preceding section) is distributed across all of Nepal (Figs 2, 3, 96, 126, 214).

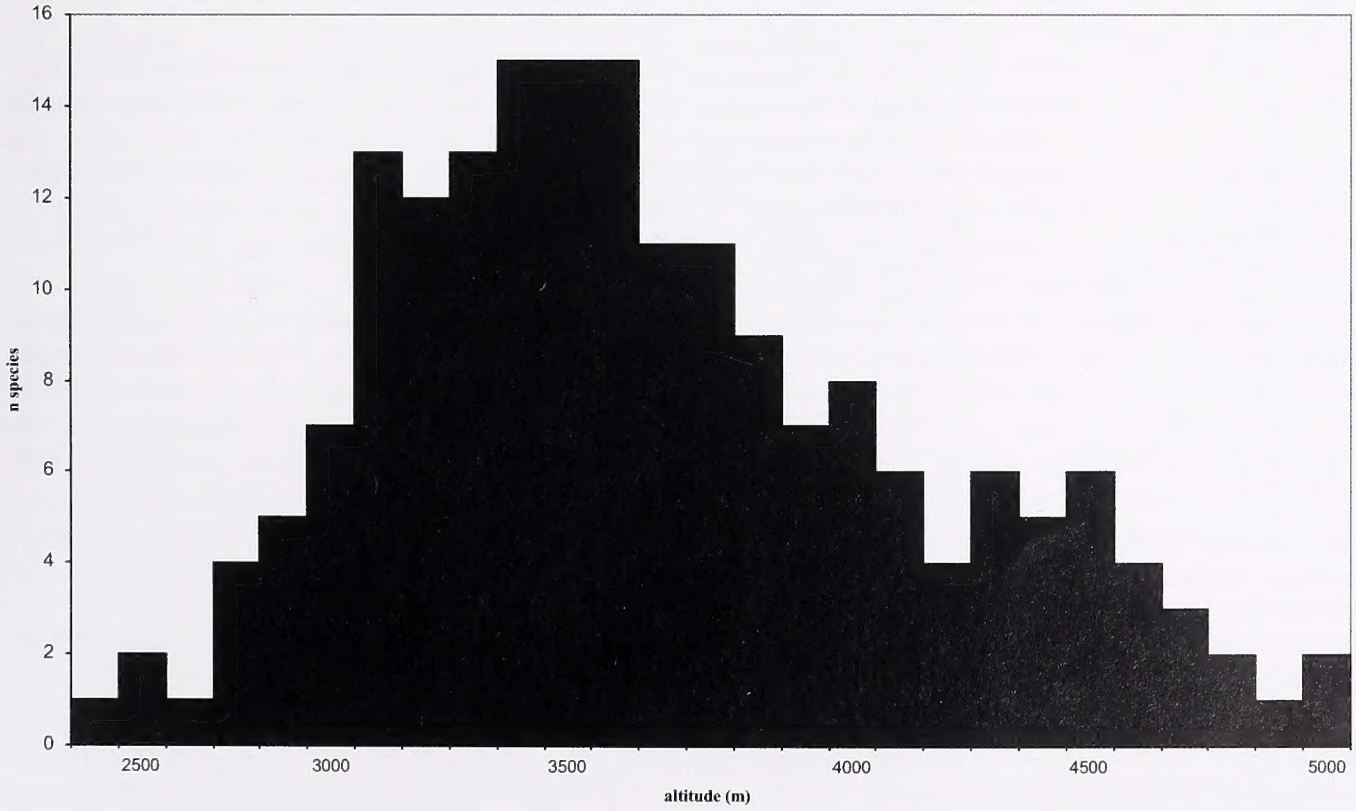

Fig. 1. Pooled vertical distribution of Himalayan *Lathrobium* species.

Catalogue of the *Lathrobium* species of the Himalaya

In the catalogue, the species are listed alphabetically. The references in the catalogue are abbreviated as follows: App = present paper; C75 = Coiffait (1975), C81 = Coiffait (1981), C82a = Coiffait (1982a), C82b = Coiffait (1982b), C83 = Coiffait (1983), C84 = Coiffait (1984), C87 = Coiffait (1987), S76 = Scheerpeltz (1976).

Species	**Distribution**	**References**	**Altitude**
aciforme sp. n.	C-Nepal: Annapurna	App	4500–4700 m
aculeatum Coiffait, 1982	C-Nepal: N-Dhaulagiri,	App, C82a	3300–3400 m
annapurnense sp. n.	C-Nepal: Annapurna	App	4900 m
apalatum sp. n.	C-Nepal: S-Manaslu: Meme Pokhari	App	4300–4400 m
attritum sp. n.	C-Nepal: Bagmati prov.: Yardang ridge	App	3250 m
barbatum sp. n.	C-Nepal: N-Annapurna	App	3000–3500 m
barbulatum sp. n.	C-Nepal: N-Annapurna	App	3050 m
barthei Coiffait, 1987 = *alticola* Coiffait, 1975	W-Nepal: Jumla: Mt. Mahidoela	App, C75, C87	5000 m
bibarbatum sp. n.	NE-Nepal: Taplejung district	App	3400–3600 m
calcaratum sp. n.	C-Nepal: Kali-Gandaki valley	App	?
cassagnaui Coiffait, 1982	eastern C-Nepal: Mt. Kalinchock	App, C82b	3000 m
cavicrus sp. n.	C-Nepal: Manaslu	App	2800–3300 m
compressicrus sp. n.	C-Nepal: Manaslu	App	3800–4100 m
compressum sp. n.	eastern central Nepal, NNE Kathmandu, Bagmati province, Shermathang in Bairavkund Lekh	App	2900 m
curvum sp. n.	C-Nepal: Dhaulagiri	App	2700–2900 m
deuvei Coiffait, 1981	C-Nepal: Manaslu: Himal Chuli	App, C81	4300 m
diremptum sp. n.	NE-Nepal: Taplejung district	App	3250–3500 m
discissum sp. n.	N-India: W-Bengal: Darjeeling; E-Nepal: Panchthar district	App	2700–3100 m
emodense Coiffait, 1975 = *goropanense* Coiffait, 1983; syn. n.	C-Nepal: W Pokhara, Ghorepani env.	App, C75, C83	3050–3100 m
excisum sp. n.	E-Nepal: Rolwaling Himal	App	3300–3800 m
exsertum sp. n.	C-Nepal: Bagmati province: N Kathmandu, Yangri ridge and environs of Thare Pati	App	3100–4800 m
fodens sp. n.	W-Nepal: Jumla district	App	3550–4100 m
franzi Coiffait, 1975	C-Nepal: NNW Kathmandu	App, C75	?
ganeshense Coiffait, 1983	C-Nepal: Ganesh Himal	App, C83	4300–4500 m
gladiator Coiffait, 1982	Kashmir: Pir Panjal pass	App, C82b	3200–3700 m
ignoratum sp. n.	C-Nepal: N Kathmandu, western Langtang region	App	3600–3800 m
inexcisum sp. n.	NE-Nepal: Taplejung district	App	3250–3700 m
infractum sp. n.	E-Nepal: Solukhumbu district	App	3000 m
inustum Coiffait, 1982	W-Nepal: Jumla: Maharigaon env.	C82a	3000–4000 m
janetscheki Scheerpeltz, 1976	E-Nepal: Khumbu: Pangpoche env.	App, S76	?
jumlense Coiffait, 1982	W-Nepal: Jumla: Dampa pass near Chanta	App, C82a	3500 m
khumbuense Coiffait, 1982	E-Nepal: Khumbu: Lukla	App, C82a, C83	3000–4000 m
kleebergi sp. n.	E-Nepal: Rolwaling Himal	App	2400–3300 m
lamjunense sp. n.	C-Nepal: Lamjun Himal	App	4300–4600 m
lassallei Coiffait, 1981 = *sherpa* Coiffait, 1982, syn. n.	eastern central Nepal, Mt. Kalinchock environs, region NE Barahbise	App, C81, C82b	3000–3250 m
milkeense sp. n.	E-Nepal: Milke Himal	App	2500 m
muguicum sp. n.	NW-Nepal: Mugu district	App	3200 m
nepalense Coiffait, 1975	C-Nepal: Bagmati province	App, C75	2800–3500 m
nepalorientis Coiffait, 1984	E-Nepal: Jaljale Himal	App, C84	4000 m
palatum sp. n.	C-Nepal: Annapurna	App	5000 m
pectinatum Coiffait, 1981	E-Nepal: Manaslu	App, C81	3000–3500 m
planissimum sp. n.	NW-Nepal: Mahakali	App	3450 m
privum sp. n.	W-Nepal: Jumla	App	3500 m
rupinaicum sp. n.	C-Nepal: S-Manaslu	App	4100–4500 m
separatum sp. n.	N-India: W-Bengal: Darjeeling	App	2700–3100 m
spiculatum sp. n.	eastern C-Nepal: Langtang	App	2900–4800 m
spinosissimum sp. n.	C-Nepal: Lamjun Himal	App	3700 m
umbhakense sp. n.	E-Nepal: Sankhua Sabha and Taplejung districts	App	3450–4200 m

Natural history. As was to be expected based on the hypothesised Holarctic distribution of the genus, the Himalayan *Lathrobium* species are absent from lower elevations. The altitudes range from 2400 to 5000 m, with most species occurring between 3000 and 4500 m (Fig. 1). Species of the *L. deuvei* group appear to be specially adapted and confined to high-altitude habitats above 4000 m. As far as can be inferred from the data specified from the labels, from Franz′ unpublished collection notes, as well as from unpublished reports of colleagues who collected *Lathrobium* in Nepal, the species live in the leaf litter of montane shrubland and forests (alder, birch, fir, spruce, rhododendron, etc.) (Figs 295–297). Species of the *L. deuvei* group have also been found in unforested, alpine habitats. On several occasions, two or more *Lathrobium* species, sometimes of the same species group, were collected in the same localities. Teneral adults were found in April (three species), May (one species), June (two species), September (one species), and October (one species).

KEY TO THE HIMALAYAN *LATHROBIUM* SPECIES

1. ♂: aedeagus without sclerotised dorsal plate, with long, dark membranous tube, but without distinctly sclerotised structures in internal sac; ventral process of aedeagus slender, apically narrowly truncate in ventral view (Figs 171–172, 178–179); sternites VII and VIII without distinctly modified pubescence (Figs 169–170, 176–177). ♀: tergite IX distinctly divided into two hemi-tergites (Fig. 174); tergite X almost reaching anterior margin of tergite IX. Species from the extreme east of Nepal and from Darjeeling (India). The *Lathrobium discissum* group 2

– ♂: aedeagus mostly with at least weakly sclerotised dorsal plate and often with slerotised internal structures; ventral process of aedeagus apically not narrowly truncate in ventral view; sternites VII and/or VIII often with distinctly modified chaetotaxy. ♀: tergite IX anteriorly at most with fine, membranous median suture; anterior portion of tergite X clearly distant from anterior margin of tergite IX 3

2. Larger species: body length 7.5–9.0 mm; length of forebody at least 3.1 mm. ♂: aedeagus approximately 1.5 mm long, shaped as in Figs 171–172; posterior margin of sternite VII distinctly concave in the middle (Fig. 169); sternite VIII with moderately deep posterior excision and with moderately dense pubescence (Fig. 170). E-Nepal: Panchthar district; N-India: West Bengal: Darjeeling district (Fig. 126) .... ***L. discissum*** sp. n.

– Smaller species: body length 5.5–6.5 mm; length of forebody 3.0 mm at most. ♂: aedeagus 0.9–1.0 mm long, shaped as in Figs 178–179; posterior margin of sternite VII very weakly concave in the middle (Fig. 176); sternite VIII with shallow posterior excision and with sparse pubescence (Fig. 177). N-India: West Bengal: Darjeeling district (Fig. 3) .... ***L. separatum*** sp. n.

3. Species of usually dark coloration; at least head, pronotum, and abdomen dark-brown to blackish-brown. Head and pronotum with microsculpture. Eyes moderately small, composed of at least approximately 20 ommatidia. Pronotum rather weakly oblong, approximately 1.15 times as long as broad, broader than, or approximately as broad as head, and strongly convex in cross-section (e.g., Figs 5, 18). Body size small to moderately large; length of forebody 2.3–3.8 mm. ♂: sternite VII with weakly modified pubescence at most; sternite VIII often with modified setae, posteriorly at most with very shallow posterior excision (e.g. Figs 20, 24), sometimes even produced in the middle (e.g., Fig. 30); aedeagus usually rather compact, though often with long and acute ventral process, and with moderately sclerotised dorsal plate at most. ♀: tergite IX mostly with membranous suture in the middle; sternite VIII with micropubescence posteriorly. Central and eastern Nepal (Figs 2–3). The *L. nepalense* group 4

– Pronotum without microsculpture, less convex in cross-section, and almost always more slender. Eyes mostly smaller and composed of less than 20 ommatidia. Coloration mostly paler. ♂: sternite VIII posteriorly with deeper excision, never produced in the middle; dorsal plate of aedeagus in dark-coloured species strongly sclerotised. ♀: tergite IX never with median suture; sternite VIII usually without micropubescence posteriorly 18

4. Smaller species; length of forebody at most 3.0 mm. Species from eastern Nepal 5

– Larger species; length of forebody at least 3.0 mm. Species from central and eastern Nepal 11

5. ♂: sternite VIII without modified setae, posterior margin broadly and weakly concave (Fig. 40); aedeagus as in Fig. 41. ♀: sternite VIII as in Fig. 42. Khumbu (Fig. 2) .... ***L. khumbuense*** Coiffait

– ♂: sternite VIII with modified setae, posterior margin either with small and shallow median concavity or produced in the middle; aedeagus of different morphology 6

6. ♂: posterior margin of sternite VIII at least weakly convex in the middle 7

– ♂: posterior margin of sternite VIII weakly concave in the middle 8

7. Smaller species; length of forebody 2.3–2.6 mm. ♂: sternite VIII approximately as long as broad, on either side of middle with weakly defined cluster of dense setae, and with distinctly convex posterior mar-

gin (Fig. 76); aedeagus smaller, approximately 0.8 mm long, ventral process symmetric in ventral view and weakly bent in lateral view (Figs 77–79). ♀: sternite VIII strongly produced posteriorly (Fig. 81). Taplejung district (Fig. 3) .... ***L. inexcisum*** sp. n.

– Larger species; length of forebody 2.6–3.0 mm. ♂: sternite VIII distinctly transverse, with median cluster of moderately dense black setae, and with weakly convex posterior margin (Fig. 83); aedeagus larger, approximately 1.0 mm long, ventral process strongly asymmetric in ventral view and strongly bent in lateral view (Figs 84–85). ♀: sexual characters unknown. Solukhumbu district (Fig. 3) .... ***L. infractum*** sp. n.

8. ♂: ventral process of aedeagus strongly bent in lateral view (Figs 50, 54 9

– ♂: ventral process of aedeagus weakly bent and apically very acute in lateral view (e.g., Figs 60–63) ...10

9 ♂: aedeagus larger, approximately 1.05 mm long; ventral process of aedeagus symmetric in ventral view and apically more acute in lateral view; dorsal plate strongly sclerotised and longer (Figs 54–55). Milke Himal (Fig. 2) .... ***L. milkeense*** sp. n.

– ♂: aedeagus slightly smaller, 0.95 mm long; ventral process of aedeagus distinctly asymmetric in ventral view and apically less acute in lateral view; dorsal plate less strongly sclerotised and shorter (Figs 50–51). Mt. Everest range (Fig. 2) .... ***L. janetscheki*** Scheerpeltz

10. ♂: sternite VIII approximately as long as wide (Fig. 45); aedeagus shaped as in Figs 46–47. Jaljale Himal (Fig. 2) .... ***L. nepalorientis*** Coiffait

– ♂: sternite VIII transverse (Fig. 59); aedeagus shaped as in Figs 60–63. ♀: sternite VIII as in Fig. 64. Sankhua Sabha and Taplejung districts (Fig. 3) .... ***L. umbhakense*** sp. n.

11. Species from eastern Nepal (east of 86°10'E longitude) 12

– Species from central Nepal (west of 86°10'E longitude) 14

12. ♂: sternite VIII with extensive median cluster of modified setae and with broadly and weakly concave posterior margin (Fig. 20); aedeagus with relatively short and apically not very acute ventral process in lateral view (Fig. 21). ♀: sternite VIII as in Fig. 22; tergite IX without median suture. Rolwaling Himal (Fig. 2) .... ***L. kleebergi*** sp. n.

– ♂: sternite VIII with a cluster of less distinctly modified setae on either side of middle and with distinctly convex posterior margin; aedeagus with longer and apically very acute ventral process in lateral view. ♀: tergite IX with median suture 13

13. ♂: sternite VII with posterior margin distinctly concave in the middle (Fig. 70); sternite VIII with weakly defined clusters of moderately dense setae and with less strongly convex posterior margin (Fig. 71); aedeagus approximately 1.0 mm long and with less slender ventral process in lateral and in ventral view (Figs 72–73). ♀: sternite VIII as in Fig. 74. Taplejung district (Fig. 2) .... ***L. diremptum*** sp. n.

– ♂: sternite VII with posterior margin broadl and less distinctly concave (Fig. 65); sternite VIII with distinct cluster of very dense setae on either side of middle and with strongly convex posterior margin (Fig. 66); aedeagus 1.1 mm long and with more slender ventral process both in lateral and in ventral view (Figs 67-68). ♀: sternite VIII as in Fig. 69. Taplejung district (Fig. 3) .... ***L. bibarbatum*** sp. n.

14. ♂: middle of posterior margin of sternite VIII weakly concave, without additional modifications...... 15

– ♂: middle of posterior margin of sternite VIII either convex, or somewhat elevated and with pair of clusters of dense black setae 17

15. ♂: apical portion of ventral process of aedeagus distinctly elongate, slender, symmetric, and dorso-ventrally compressed (Figs 37–38). Species of relatively large size; length of forebody 3.4–3.6 mm. Bagmati province: Bairavkund Lekh (Fig. 2) .... ***L. compressum*** sp. n.

– ♂: apical portion of ventral process of aedeagus shorter, less slender, and not dorso-ventrally compressed 16

16. ♂: apex of ventral process of aedeagus very acute in lateral view and slightly asymmetric in ventral view; dorsal plate longer (Figs 25–27). ♀: sternite VIII as in Fig. 28. Bagmati province (Fig. 2) .... ***L. ignoratum*** sp. n.

– ♂: apex of ventral process stouter; dorsal plate shorter (Figs 14–15). ♀: sternite VIII as in Figs 16–17. Environs of Kalinchok (Fig. 2) ... ***L. lassallei*** Coiffait

17. ♂: sternite VIII on either side of middle with rather extensive cluster of dense black setae, posterior margin convex in the middle (Fig. 30); aedeagus with apex of ventral process shorter and stouter in lateral view; dorsal plate shorter (Figs 31–32). ♀: sternite VIII more strongly produced posteriorly (Fig. 33). Bagmati province (Fig. 3)......... ***L. exsertum*** sp. n.

– ♂: sternite VIII with median cluster of dense setae, posterior margin somewhat produced and elevated in the middle, this elevation with pair of clusters of dense setae (Fig. 7); aedeagus with apex of ventral process longer, more slender, and more acute; dorsal plate longer (Figs 8–9). ♀: sternite VIII less strongly produced posteriorly (Fig. 10). Bagmati province (Fig. 2) .... ***L. nepalense*** Coiffait

18. Eyes moderately small, composed of at least approximately 20 ommatidia. Coloration of body brown to blackish-brown, rarely uniformly reddish (*L. emod-*

ense, *L. excisum*). Mostly species of intermediate body size (length of forebody < 3.1 mm). Nepal eastwards to Rolwaling Himal 19

– Eyes smaller, composed of approximately ten ommatidia at most. Either large and slender species (length of forebody > 3.0 mm) of dark-reddish to reddish-brown coloration or small species of more or less uniformly reddish coloration 24

19. Larger species; length of forebody approximately 3.4 mm. Eyes larger, composed of approximately 30 ommatidia. ♂: aedeagus (Figs 90–91) larger, 1.5 mm long, with slender, dorso-ventrally compressed ventral process; internal sac with long membranous tube, but without distinctly sclerotised internal structures; dorsal plate flat and shorter; pubescence of sternite VIII not distinctly modified (Fig. 89). Northwestern Nepal (Fig. 96). The *L. muguicum* group .... ***L. muguicum*** sp. n.

– Smaller species; length of forebody < 3.1 mm. Eyes smaller, composed of approximately 20–25 ommatidia. ♂: aedeagus smaller, 0.8–1.3 mm long; ventral process less slender in lateral view and dorso-ventrally not compressed; sternite VIII and mostly also VII with modified setae in the middle; posterior margin of sternite VIII often pointed on either side of posterior excision. Central Nepal and eastern Nepal ... 20

20. ♂: aedeagus with dark membranous tube, but without sclerotised spines in internal sac and with lamellate dorsal plate, ventral process of characteristic shape (Figs 115–116); sternite VII with modified, stout black setae in median portion (Fig. 113); sternite VIII weakly transverse and with stout black setae in median portion, posterior margin pointed on either side of middle (Fig. 114). ♀: sternite VIII weakly oblong (Fig. 114). Eastern Nepal: Rolwaling Himal (Fig. 96). The *L. excisum* group .... ***L. excisum*** sp. n.

– ♂: aedeagus with sclerotised internal structures in internal sac; dorsal plate stout (not flat), long, and apically more or less distinctly hooked in lateral view. Central Nepal. The *L. emodense* group 21

21. Smaller species, length of forebody 2.4–2.5 mm. ♂: aedeagus smaller, 0.83 mm long, shaped as in Fig. 110; internal sac with two weakly sclerotised, not spine-shaped structures; pubescence of sternites VII and VIII rather sparse (Figs 108–109). ♀: sternite VIII as in Fig. 111. Annapurna (Fig. 96) .... ***L. annapurnense*** sp. n.

– On average larger species; length of forebody 2.4–2.9 mm. ♂: aedeagus > 1.0 mm long and of different shape; internal sac with at least four strongly sclerotised, more or less curved, spine-like structures ... 22

22. ♂: sternite VIII with sparser and less numerous modified setae in the middle, posterior margin pointed on either side of posterior excision (Fig. 93); sternite VII as in Fig. 92; aedeagus 1.2 mm long; ventral process symmetric and shaped as in Figs 94–95; dorsal plate only indistinctly hooked apically; internal structures long and weakly curved in lateral view. Region to the west of Pokhara (Fig. 96) .... ***L. emodense*** Coiffait

– ♂: sternite VIII with denser and more numerous modified setae in the middle; aedeagus with ventral process of different shape and sometimes asymmetric in ventral view; dorsal plate more distinctly hooked in lateral view; internal structures shorter, more strongly curved in lateral view, and of similar length 23

23. ♂: sternite VII with more numerous stouter and shorter modified setae in median portion (Fig. 98); sternite VIII with more strongly modified (shorter and stouter) setae in posterior median portion, posterior excision shallower and broader (Fig. 99); aedeagus larger, approximately 1.3 mm long, shaped as in Figs 100–101; ventral process of aedeagus somewhat asymmetric in ventral view; dorsal plate longer; internal structures regularly curved. Dhaulagiri (Fig. 96) .... ***L. curvum*** sp. n.

– ♂: sternite VII with fewer and less strongly modified setae in median portion (Fig. 103); sternite VIII with few and less strongly modified setae in posterior median portion, posterior excision much narrower (Fig. 104); aedeagus smaller, approximately 1.0 mm long, shaped as in Figs 105–106; dorsal plate shorter; internal sac with differently shaped structures of different lengths. ♀: sternite VIII as in Fig. 125. Annapurna range: southern Lamjun Himal (Fig. 96) .... ***L. spinosissimum*** sp. n.

24. Moderately large to large species (length of forebody > 3.0 mm) of reddish to dark-brown coloration and conspicuously slender habitus. Eyes minute and composed of very few ommatidia. ♂: sternite VII strongly transverse and strongly excavate posteriorly (e.g., Figs 127, 132); sternite VIII transverse, with deep (exception: *L. ganeshense*) and broadly V-shaped posterior excision and mostly with conspicuous fringes or a cluster of dense dark setae (e.g., Figs 128, 133); aedeagus (e.g., Figs 129, 134–135) large, 1.3–1.9 mm long; ventral process long and apically acute; dorsal plate composed of a lamellate basal and a distinctly sclerotised and apically hooked apical portion; internal sac with long, slender, and distinctly sclerotised structures. ♀: sternite VIII often strongly produced posteriorly (e.g., Fig. 136). Western and central Nepal (Fig. 126). Known only from high elevations above 4000 m. The *L. deuvei* group 25

– Small species (length of forebody < 3.0 mm). Body of more or less uniformly reddish coloration. Male sexual characters different 32

25. Largest Himalayan representative of the genus,

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length of forebody > 4.0 mm. ♂: sternite VII broadly and rather deeply excised posteriorly (Fig. 157); sternite VIII with deep posterior excision (Fig. 158); aedeagus shaped as in Figs 159–160. Western Nepal: Jumla region (Fig. 126) .... ***L. barthei*** Coiffait

– Smaller species; length of forebody < 4.0 mm. Male sexual characters different. Central Nepal 26

26. Body smaller; length of forebody 3.4 mm at most. ♂: aedeagus smaller, 1.3–1.4 mm long, and with shorter dorsal plate (Fig. 155); posterior margin of sternite VII distinctly excavate and weakly bisinuate in the middle (Fig. 153); sternite VIII with deep and broadly V-shaped posterior excision (Fig. 154). Southern Manaslu Himal (Fig. 126) ... ***L. rupinaicum*** sp. n.

– Body larger; length of forebody at least 3.4 mm. ♂: aedeagus larger, > 1.5 mm long, and with longer dorsal plate. Sternite VII and/or VIII of different shape and chaetotaxy 27

27. ♂: posterior excision of sternite VIII relatively shallow (Fig. 163); posterior margin of sternite VII broadly concave, without distinct median excavation (Fig. 162); aedeagus 1.6 mm long; ventral process apically very acute and straight (Figs 164–165). ♀: sternite VIII relatively weakly produced posteriorly (Fig. 166). Ganesh Himal (Fig. 126) .... ***L. ganeshense*** Coiffait

– ♂: posterior excision of sternite VIII deep; posterior margin of sternite VII with distinct median excavation; aedeagus of different shape. ♀: sternite VIII more strongly produced posteriorly (exceptions: *L. apalatum* and *L. deuvei*). Distribution different ... 28

28. ♂: aedeagus with ventral process much stouter in apical portion (Fig. 150); sternite VIII with conspicuously deep and broad posterior excision, its depth distinctly more than half the length of sternite (Fig. 149); sternite VII with distinctly bisinuate posterior excision (Fig. 148). ♀: sternite VIII transverse and obtusely pointed posteriorly (Fig. 151). Southern Manaslu Himal (Fig. 126) .... ***L. apalatum*** sp. n.

– ♂: aedeagus with ventral process longer and more slender in apical portion; sternite VIII with less deep and/or less broad posterior excision. ♀: sternite VIII oblong and distinctly, convexly produced posteriorly (exception: *L. deuvei*) 29

29. ♀: sternite VIII obtusely pointed posteriorly (Fig. 130). ♂: posterior excision of sternite VII broad, moderately deep, and not bisinuate (Fig. 127); posterior excision of sternite VIII very deep, its depth more than half the length of sternite, and symmetric (Fig. 128); aedeagus shaped as in Fig. 129. Manaslu: Himal Chuli (Fig. 126) .... ***L. deuvei*** Coiffait

– ♀: sternite VIII strongly and convexly produced posteriorly. ♂: sternites VII and/or VIII of different shape and chaetotaxy; aedeagus of different morphology. Annapurna range...................................... 30

30. ♂: aedeagus larger, 1.8–2.0 mm long, shaped as in Figs 134–135; sternite VII with deeper posterior excavation (Fig. 132); posterior excision of sternite VIII somewhat asymmetric (Fig. 133). ♀: sternite VIII as in Fig. 136. Northern Annapurna (Fig. 126) .... ***L. lamjunense*** sp. n.

– ♂: aedeagus smaller, < 1.8 mm long; sternite VII with slightly less deep posterior excavation. Distribution different 31

31. ♂: ventral process of aedeagus apically sharply bent in lateral view (Fig. 140); sternite VIII with deeper and symmetric posterior excision (Fig. 139); sternite VII as in Fig. 138. ♀: sternite VIII as in Fig. 141. Annapurna: Kang La pass (Fig. 126) .... ***L. palatum*** sp. n.

– ♂: ventral process of aedeagus apically smoothly curved in lateral view (Fig. 145); sternite VIII with less deep and slightly asymmetric posterior excision (Fig. 144); sternite VII as in Fig. 143. ♀: sternite VIII as in Fig. 146. Annapurna: Pisang (Fig. 126) .... ***L. aciforme*** sp. n.

32. ♀: tergite X laterally compressed, strongly bulging, almost keeled in posterior portion (Figs 123–124); sternite VIII as in Fig. 122. ♂: aedeagus (Figs 120–121) 1.2 mm long, with long and strongly sclerotised ventral process; dorsal plate of aedeagus with lamellate basal and strongly sclerotised apical portion; sternite VII strongly transverse and with extensive cluster of modified setae (Fig. 118); sternite VIII produced on either side of posterior excision (Fig. 119). Kashmir. The *L. gladiator* species group .... ***L. gladiator*** Coiffait

– ♀: tergite X weakly convex in cross-section. ♂: aedeagus of different morphology, dorsal plate not strongly sclerotised; sternites VII and VIII of different shape and chaetotaxy. Nepal 33

33. ♂: sternite VII without transverse combs of pectinate setae 34

– ♂: sternite VII with transverse combs of pectinate setae (e.g., Figs 215, 219). Central and eastern Nepal (Fig. 214). The *L. pectinatum* group 38

34. ♂: aedeagus weakly sclerotised and slender, > 1.0 mm long, with conspicuously long and thin, needle-shaped ventral process; sternite VIII weakly oblong or approximately as long as broad, without distinctly modified pubescence and with somewhat asymmetric posterior excision. ♀: sternite VIII distinctly oblong. The *L. aculeatum* group. Central Nepal (Fig. 96) 35

– ♂: aedeagus much smaller, < 0.7 mm long, and of much broader shape, ventral process not thin and needle-shaped; sternite VII without modified setae; sternite VIII oblong, without modified setae, and with symmetric posterior excision. ♀: sternite VIII distinctly oblong. Western Nepal (Fig. 96). The *L. jumlense* group 36

35. ♂: aedeagus 1.2–1.3 mm long, ventral process extremely long, longer than basal portion of aedeagus (Figs 203–212); posterior margin of sternite VII indistinctly concave, almost truncate (Fig. 201); sternite VIII approximately as long as broad and with broader posterior excision (Fig. 202). ♀: sternite VIII as in Fig. 213; tergite X shorter than tergite IX in the middle. Bagmati province: region ca. 40 km north of Kathmandu (Fig. 96) ***L. spiculatum*** sp. n.
– ♂: aedeagus approximately 1.1 mm long, ventral process shorter than basal portion of aedeagus (Figs 196–197); posterior margin of sternite VII more distinctly concave (Fig. 194); sternite VIII oblong and with narrower posterior excision (Fig. 195). ♀: sternite VIII as in Fig. 198; tergite X longer than tergite IX in the middle. Northern Dhaulagiri range (Fig. 96) .... ***L. aculeatum*** Coiffait
36. ♂: aedeagus dorso-ventrally distinctly flattened and apically less acute in ventral view (Figs 277–279); posterior excision of sternite VIII broadly V-shaped (Fig. 276). Extreme northwest of Nepal: Mahakali region (Fig. 96) .... ***L. planissimum*** sp. n.
– ♂: aedeagus dorso-ventrally not distinctly flattened, ventral process apically acute in ventral view; posterior excision of sternite VIII not distinctly V-shaped. Jumla region (Fig. 96) 37
37. ♂: sternite VII relatively weakly transverse and with weakly concave posterior margin (Fig. 182); posterior excision of sternite VIII deeper (Fig. 183); aedeagus much larger, approximately 0.65 mm long and relatively narrower in ventral view (Figs 184–185). ♀: sternite VIII slightly less slender (Fig. 186) .... ***L. jumlense*** Coiffait
– ♂: sternite VII distinctly transverse and with more strongly concave posterior margin (Fig. 189); posterior excision of sternite VIII less deep and almost of semi-circular shape (Fig. 190); aedeagus minute (smaller than in any other Himalayan *Lathrobium* species), 0.33 mm long and relatively broader in ventral view (Figs 191–192). ♀: sternite VIII slightly more slender (Fig. 193) .... ***L. inustum*** Coiffait
38. ♂: metatibia modified: either conspicuously flattened, or in basal third with pronounced postero-ventral tooth and in apical half distinctly excavate (note that females of most of the species are unknown and that this may not always be a secondary sexual character); ventral process of aedeagus shorter, not needle-shaped; sternite VII with at least two complete transverse combs of pectinate setae. Central Nepal: Manaslu and Annapurna ranges 39
– ♂: metatibia moderately flattened at most, otherwise unmodified; ventral process of aedeagus long, thin and mostly somewhat needle-shaped; sternite VII with one or two transverse rows of pectinate setae. 43
39. ♂: metatibia conspicuously flattened, without tooth; ventral process of aedeagus of broadly triangular shape and symmetric in ventral view. Central Nepal: Manaslu range 40
– ♂: metatibia with distinct postero-ventral tooth in basal third and strongly excavate in apical half (Fig. 225); ventral process of aedeagus more slender and distinctly asymmetric in ventral view. Central Nepal: Northern Annapurna and Manaslu ranges 41
40. Apical half of mesotibia conspicuously flattened in both sexes. ♂: ventral process of aedeagus broader and slightly longer (Figs 221–222); sternite VII with two uninterrupted and two interrupted transverse rows of pectinate setae (Fig. 219); sternite VIII as in Fig. 220. ♀: sternite VIII as in Fig. 223. Barapokhari Lekh (Fig. 214) .... ***L. compressicrus*** sp. n.
– Mesotibia not conspicuously flattened. ♂: ventral process of aedeagus less broad and slightly shorter (Figs 217–218); sternite VII with two complete and a rudimentary third transverse row of pectinate setae (Fig. 215); sternite VIII as in Fig. 216. Distribution: Fig. 214 .... ***L. pectinatum*** Coiffait
41. ♂: sternite VII with posterior margin and posterior transverse combs of pectinate setae almost straight (Fig. 284); ventral process of aedeagus almost symmetric in ventral view and apically less acute in lateral view (Figs 286–287). ♀: sternite VIII relatively longer (Fig. 289). Manaslu range (Fig. 214) .... ***L. cavicrus*** sp. n.
– ♂: sternite VII with posterior margin and posterior transverse combs of pectinate setae distinctly concave; ventral process of aedeagus distinctly asymmetric in ventral view and apically more acute in lateral view. ♀: sternite VIII relatively shorter (Fig. 231). Northern Annapurna range 42
42. ♂: sternite VII with apical row of pectinate setae of flatly trapezoid shape (Fig. 226); aedeagus shaped as in Figs 228–229; sternite VIII as in Fig. 227. ♀: sternite VIII as in Fig. 231. Distribution: Fig. 214 .... ***L. barbatum*** sp. n.
– ♂: sternite VII with apical row of pectinate setae curved (Fig. 232); aedeagus shaped as in Figs 234–235; sternite VIII as in Fig. 233. Distribution: Fig. 214 .... ***L. barbulatum*** sp. n.
43. ♂: metafemur distinctly modified, with postero-ventral tooth-like process approximately in the middle (e.g., Figs 237, 244); sternite VII with one or two transverse rows of pectinate setae; aedeagus with long and more or less needle-shaped ventral process ... 44
– ♂: metafemur not conspicuously modified; sternite VII with one transverse row of – in one species relatively sparse – pectinate setae; sternite VIII without pubescence in the middle and with somewhat asymmetric posterior excision 46

44. ♂: tooth-like process of metafemur apically acute (Fig. 237); sternite VII with two long transverse rows of pectinate setae (Fig. 238); sternite VIII with weakly asymmetric posterior excision (Fig. 239); aedeagus approximately 1.0 mm long, ventral process somewhat spear-shaped and symmetric in ventral view (Figs 240–241). Central Nepal: Bagmati province (Fig. 214) .... ***L. franzi*** Coiffait

– ♂: tooth-like process of metafemur not distinctly acute apically; sternite VII with one transverse row of pectinate setae; aedeagus at least approximately 1.1 mm long; ventral process asymmetric and not spear-shaped in ventral view 45

45. ♂: metafemur with symmetric and somewhat axe-shaped process (Fig. 251); sternite VII with straight transverse row of pectinate setae and with weakly concave posterior margin (Fig. 252); sternite VIII with asymmetric posterior excision (Fig. 253); aedeagus with much longer and more slender ventral process somewhat resembling a golf club (Figs 254-255). ♀: sternite VIII strongly oblong (Fig. 256). West Nepal: Jumla district (Fig. 214) ... ***L. privum*** sp. n.

– ♂: metafemur asymmetric, not axe-shaped (Fig. 244); sternite VII with flatly trapezoid transverse row of pectinate setae, posterior margin with trapezoid excavation in the middle (Fig. 245); posterior excision of sternite VIII almost symmetric (Fig. 246); ventral process shorter, less slender, and somewhat scoop-shaped (Figs 247–248). Central Nepal: Kali-Gandaki valley (valley separating the Annapurna and Dhaulagiri ranges) (Fig. 214) .... ***L. calcaratum*** sp. n.

46. ♂: ventral process of aedeagus gradually narrowed toward apex and not needle-shaped in ventral view (Figs 271–272); sternite VII posteriorly with few and not contiguous pectinate setae (Fig. 269); sternite VIII as in Fig. 270. Bagmati province, Yardang ridge west of Barahbise (Fig. 214) ......***L. attritum*** sp. n.

– ♂: ventral process thin and slender, not gradually narrowed towards apex in ventral view; sternite VII posteriorly with transverse comb of numerous contiguous pectinate setae 47

47. ♂: aedeagus 1.3 mm long, ventral process longer and more slender, distinctly needle-shaped (Figs 266–267); sternite VII with transverse row of pectinate setae bisinuate (Fig. 264); posterior excision of sternite VIII smaller (Fig. 265). ♀: sternite VIII shaped as in Fig. 268. West Nepal: Jumla region (Fig. 214) .... ***L. fodens*** sp. n.

– ♂: aedeagus 1.15 mm long, ventral process shorter and stouter (Figs 260–261); sternite VII with almost straight transverse row of pectinate setae (Fig. 258); posterior excision of sternite VIII larger (Fig. 259). ♀: sternite VIII as in Fig. 262. Central Nepal: Kalinchok (Fig. 214) .... ***L. cassagnaui*** Coiffait

THE HIMALAYAN *LATHROBIUM* SPECIES

The *Lathrobium nepalense* group

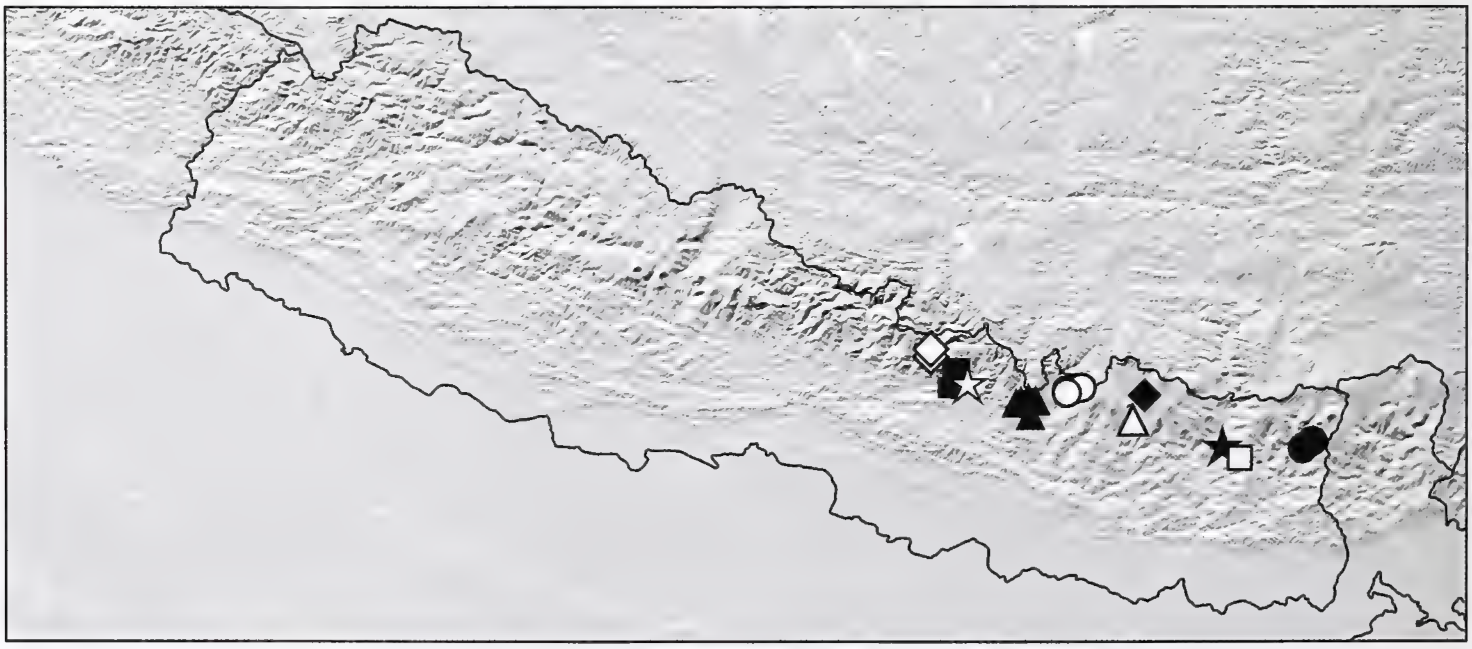


Fig. 2. Distributions of species of the *L. nepalense* group: *L. ignoratum* (open diamonds); *L. nepalense* (filled squares); *L. compressum* (open star); *L. lassallei* (filled triangles); *L. kleebergi* (open circles); *L. khumbuense* (open triangle); *L. janetscheki* (filled diamond); *L. nepalorientis* (filled star); *L. milkeense* (open square); *L. diremptum* (filled circles).

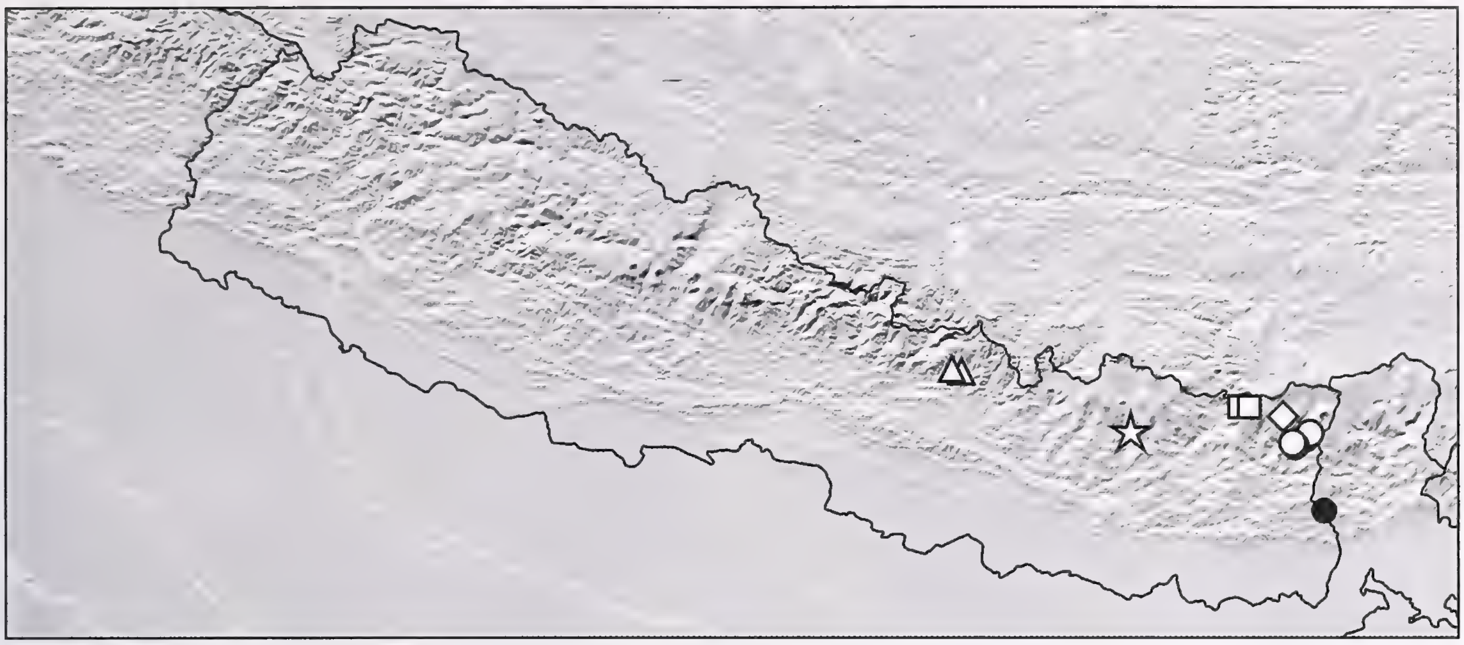


Fig. 3. Distributions of species of the *L. nepalense* (open symbols) and the *L. discissum* groups (filled circle): *L. exsertum* (open triangles); *L. infractum* (open star); *L. umbhakense* (open squares); *L. bibarbatum* (open diamond); *L. inexcisum* (open circles); *L. separatum* (filled circle).

Lathrobium nepalense **Coiffait, 1975** (Figs 2, 4–10)
Lathrobium nepalensis [sic] Coiffait, 1975: 182.

Type material examined. Holotype ♂: "Zw. Mulkharka u. Tare-Pati / Pa 158 [overleaf] / Zentral-Nepal, Sept.-Okt. 1971, lg. H. Franz / Holotype / Lathrobium nepalense H. Coiffait 1974 / Lathrobium nepalense Coiffait, det. V. Assing 2011" (NHMW). Paratypes [see also type material of *L. ignoratum*]: 1♀: same data as holotype, but "Paratype" (NHMW).

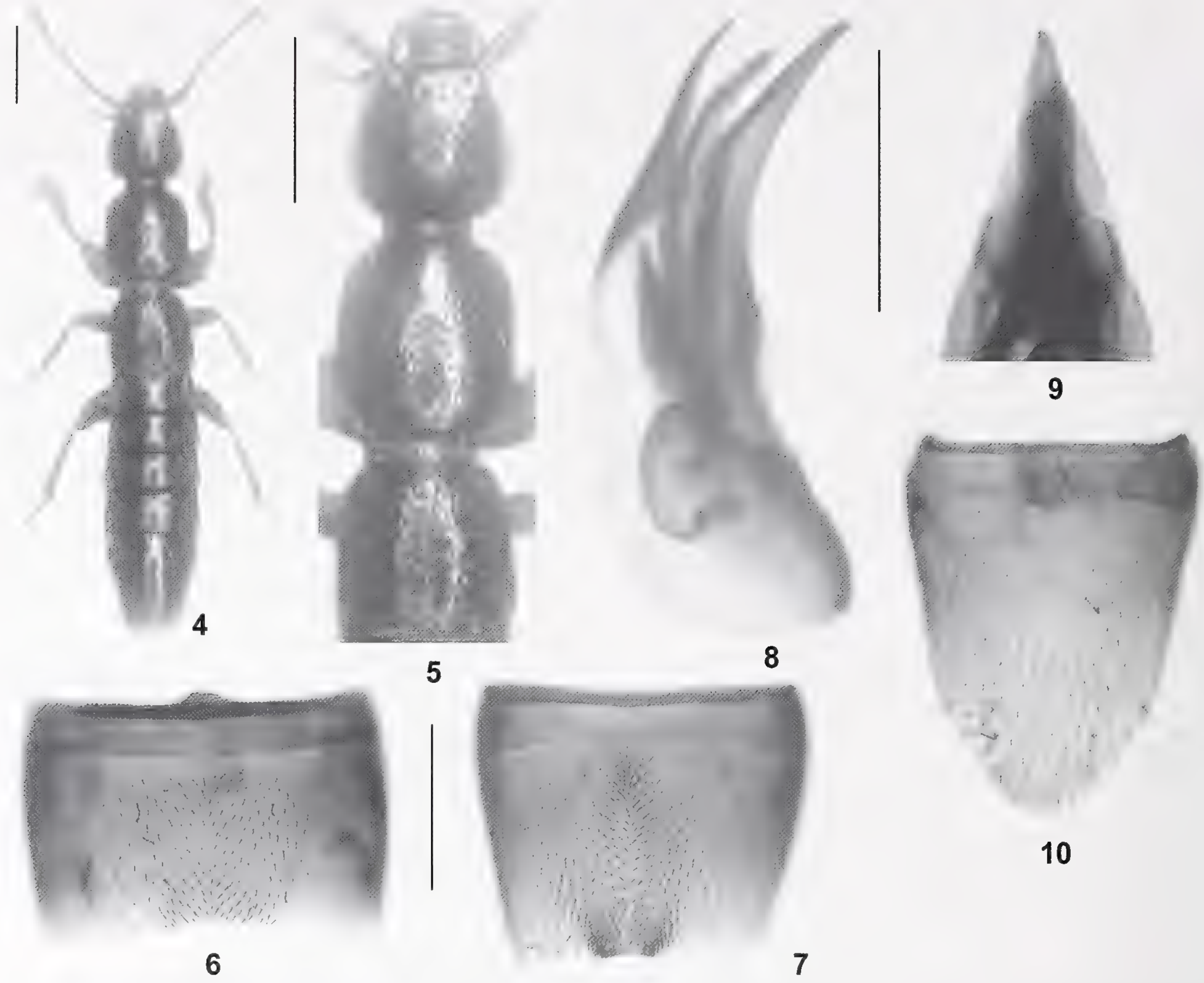
Comment. The original description is based on a male holotype and two female paratypes from "Entre Mulkharka et Tare-Pati", one female from "bois au-dessous de Fulung", and one female from "chemin de Pokhara vers Goropani" (Coiffait 1975). The holotype and two paratypes from the Franz collection at the NHMW were examined; the "female" from Fulung proved to be a male of an undescribed species (see description of *L. ignoratum*). In view of the generally restricted distributions of Himalayan *Lathrobium* species, there is little doubt that the female paratype from the environs of Pokhara, too, refers to a different, probably undescribed species. The aedeagus of the holotype is damaged: the apical portion of the ventral process is broken off. It was evidently undamaged when Coiffait (1975) figured it.

Additional material examined. Nepal: 22 exs. [partly teneral], Bagmati province, below Thare Pati, 3300 m, 10.IV.1981, leg. Löbl & Smetana (cSme, cAss); 15 exs. [partly teneral], same data, but 11.IV.1981 (cSme, cAss); 1 ex., same data, but 9.IV.1981 (cSme); 10 exs. [partly teneral], same data, but 3400 m, 13.IV.1981 (cSme, cAss); 26 exs., same data, but 3500 m, 12.IV.1981 (cSme, cAss); 11 exs., Bagmati province, Malemchi, 2800 m, 18.IV.1981, leg. Löbl & Smetana (cSme, cAss); 10 exs. [partly teneral], Bagmati province, near Mere Dara, 3000 m, 7.IV.1981, leg. Löbl & Smetana (cSme, cAss); 4 exs. [partly teneral], Bagmati province, Mere Dara, 3200 m, 8.IV.1981, leg. Löbl & Smetana (cSme, cAss); 8 exs., Nuwakot district, between Ghopte and Thare Pati, 3220 m, 23.IV.1985, leg. Smetana (cSme, cAss); 3 exs., same data, but 3250 m (cSme); 1 ex., same data, but 3150 m, 25.IV.1985 (cAss); 1 ex., same data, but 3200 m, 25.IV.1985 (cSme); 2 exs, same data, but 3200 m, 26.IV.1985 (cSme, cAss).

Redescription. Body length 6.4–8.0 mm; length of forebody 3.0–3.8 mm. Habitus as in Fig. 4. Coloration: body dark-brown to blackish-brown, with the abdominal apex, often the elytra, and sometimes also the head paler brown; legs pale-reddish to reddish-brown; antennae reddish, apical half often somewhat infuscate.

Head (Fig. 5) approximately as long as broad or weakly transverse; punctation moderately coarse, sparse in median dorsal portion, somewhat less sparse in posterior and lateral portions, but interstices on average broader than diameter of punctures; interstices with fine microreticulation. Eyes weakly projecting from lateral contours of head, small, 1/4–1/3 times as long as postocular region in dorsal view.

Pronotum (Fig. 5) 1.10–1.15 times as long as broad and 1.05–1.10 times as broad as head, strongly convex in cross-section; punctation similar to that of head, but slightly finer; interstices with microreticulation.



Figs 4–10. *Lathrobium nepalense*. **4:** habitus; **5:** forebody; **6:** male sternite VII; **7:** male sternite VIII; **8:** aedeagus in lateral view; **9:** apical portion of aedeagus in ventral view; **10:** female sternite VIII. Scale bars: 4–5: 1.0 mm; 6–10: 0.5 mm.

Elytra short, 0.55–0.60 times as long as pronotum (Fig. 5); humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced.

Abdomen broader than elytra; punctation fine and moderately dense, sparser on posterior tergites; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; sternite VII impressed along the middle, posterior margin broadly and weakly concave (Fig. 6); sternite VIII impressed along the middle, the impression with numerous weakly modified setae, at posterior margin with pair of elevations with conspicuously dense setae, posterior margin weakly bisinuate in the middle (Fig. 7); aedeagus (Figs 8–9) approximately 1.2 mm long, with slender and apically acute ventral process, with lamellate, but distinctly sclerotised dorsal plate, and with long, sclerotised internal structures.

♀: protarsomeres I–IV dilated, but somewhat less so than in male; sternite VIII much longer than tergite VIII, distinctly produced and finely pubescent posteriorly (Fig. 10); tergite IX with fine median suture; tergite X slightly longer than tergite IX in the middle.

Comparative notes. This species is most similar and evidently closely related to the following 14 species, from which it is distinguished particularly by the different shape of the ventral process of the aedeagus, as well as by the conspicuous modifications of the male sternite VIII.

Distribution and natural history. The type locality is situated between Mulkharka [27°46'N, 85°26'E] and Thare Pati [28°02'N, 85°29'E] to the northeast of Kathmandu. The additional material was found near Thare Pati, Mere Dara (ca. 5 km south of Thare Pati), and Malemchi

[28°01'N, 85°31'E] at altitudes of 2800–3500 m (Fig. 2). Part of the material collected in April is slightly teneral. Between Ghopte and Thare Pati, *L. nepalense* was found together with the closely related and similar *L. exsertum*. According to Franz´ diary, the type specimens were collected in a rhododendron forest above "Bulumje" [?] on 7.X.1971.

Lathrobium lassallei **Coiffait, 1981** (Figs 2, 11–17)
Lathrobium lassallei Coiffait, 1981: 331 f.
Lathrobium sherpa Coiffait, 1982b: 290 f.; **syn. n.**

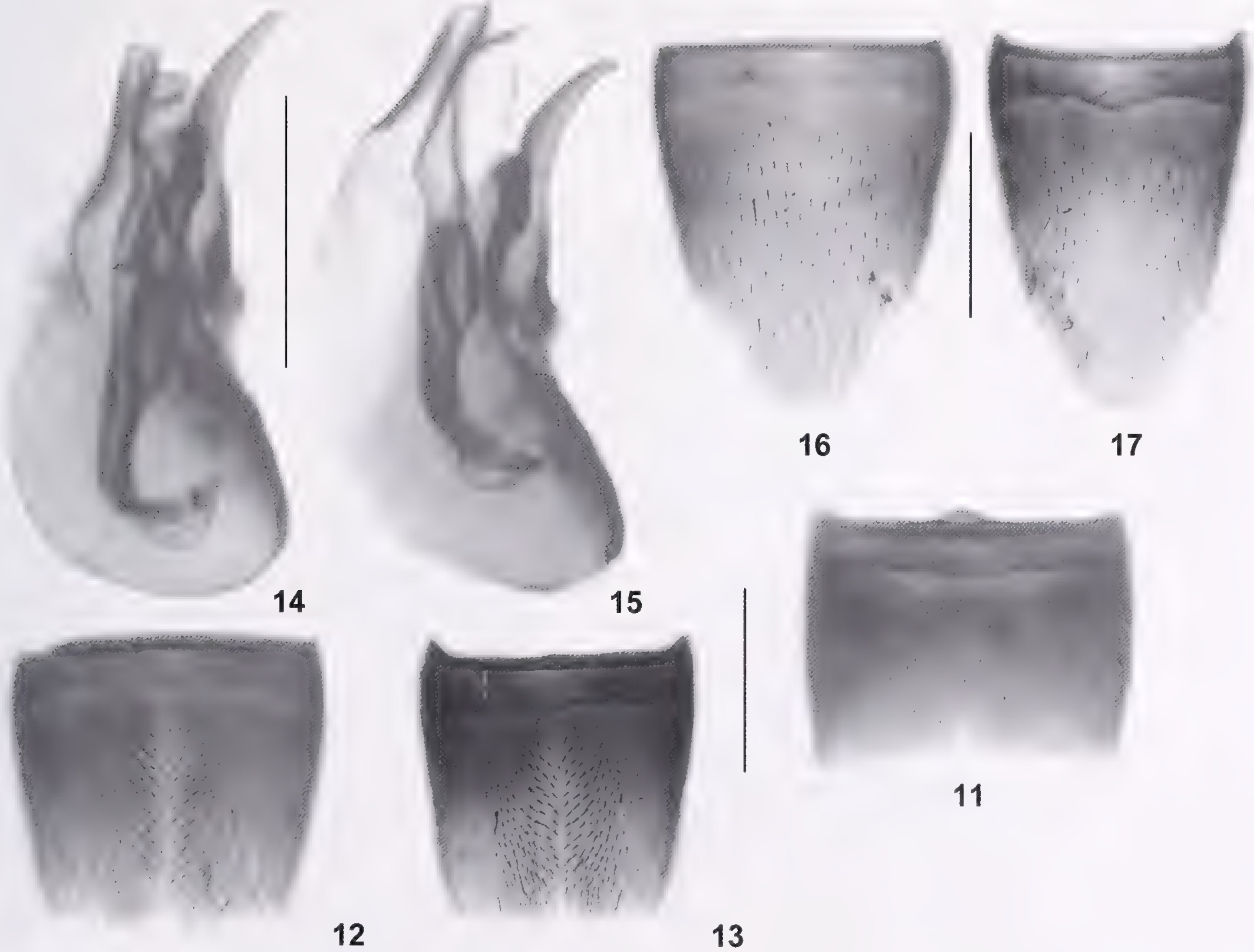
Type material examined. *L. lassallei*: Holotype ♂: "Nepal IX 80, Barabinse [sic] / Mt Kalingchok, 3000 D. L / Holotype / Lathrobium lassallei H. Coiffait 1981 / Lathrobium lassallei Coiffait, det. V. Assing 2011" (MNHNP).

L. sherpa: Holotype ♂ [aedeagus and abdominal segments IX–X missing]: "Nepal X.81, Kalingchok, 3.100 PC / Holotype / Lathrobium sherpa H. Coiffait 1982 / Lathrobium lassallei Coiffait, det. V. Assing 2011" (MNHNP). Paratype ♀: same data as holotype (MNHNP).

Comment. The original description of *L. lassallei* is based on a unique holotype male from "Barabinse [sic], Mt Kalingchock, 3000 m" (Coiffait 1981). The specimen is deposited in the Coiffait collection at the MNHNP.

Lathrobium sherpa was described from a male holotype and a female paratype from "Massif du Kalingchok, près de Barbabise [sic], 3100 m" (Coiffait 1982b). The aedeagus of the holotype is missing. According to a footnote (Coiffait 1982b: 291), it was lost before the drawings were finished. Remarkably, there is no reference to *L. lassallei* in the original description of *L. sherpa*, although the type localities of both species are practically identical and despite their similar external appearance.

Since convincing evidence was found neither in the external nor in the male sexual characters that *L. sherpa* should represent a distinct species, the name is placed in synonymy with *L. lassallei*.



Figs 11–17. *Lathrobium lassallei* (12, 14, 16: Kalinchok; 11, 13, 15, 17: Ting Sang La). **11:** male sternite VII; **12–13:** male sternite VIII; **14–15:** aedeagus in lateral view; **16–17:** female sternite VIII. Scale bars: 0.5 mm.

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Additional material examined. Nepal: 10 exs., Dolakha District, E Ting Sang La [27°49'N, 86°03'E], 3100 m, 12.–13.VI.2000, leg. Schawaller [628] (SMNS, cAss); 13 exs., Dolakha District, SW Kalinchok Mt., 3100 m, 19.-23.IV.1995, leg. Martens & Schawaller [421] (SMNS, cAss); 9 exs., Bagmati province, NE Barahbise, Yardang ridge, 3250 m, 5.V.1981, leg. Löbl & Smetana (cSme, cAss); 2 exs., Bagmati province, NE Barahbise, Pokhare, 3000 m, 7.V.1981, leg. Löbl & Smetana (cSme, cAss).

Redescription. Body length 7–8 mm; length of forebody 3.0–3.5 mm. External characters similar to those of *L. nepalense*; reliably distinguished only by the sexual characters.

♂: posterior margin of tergite VIII truncate to weakly convex; sternite VII weakly impressed in postero-median portion, posterior margin broadly and weakly concave (Fig. 11); sternite VIII impressed along the middle, the impression with numerous weakly modified setae, posterior margin weakly concave in the middle (Figs 12–13); aedeagus (Figs 14–15) 1.0–1.1 mm long, with slender and apically acute ventral process, and with lamellate dorsal plate.

♀: posterior margin of tergite VIII weakly angled in the middle; sternite VIII much longer than tergite VIII, distinctly produced posteriorly, posteriorly very finely pubescent (Figs 16–17); tergite IX with fine median suture; tergite X approximately as long as tergite IX in the middle, or nearly so.

Comparative notes. This species is highly similar and evidently closely related to *L. nepalense*, from which it is distinguished particularly by the different shape of the ventral process of the aedeagus and by the male secondary sexual characters.

Intraspecific variation. The material from Ting Sang La is distinguished from that collected on or near Mt. Kalinchok by slight differences in the shape of the ventral process of the aedeagus (Fig. 15), as well as in the shapes of the male and female sternites VIII (Figs 13, 17). Since no additional evidence was found suggesting that the two samples should belong to different species, these differences are attributed to intra- rather than interspecific variation.

Distribution and natural history. The known distribution of *L. lassallei* is confined to the Kalinchok range and the region to the northeast of Barahbise, some 60 km ENE of Kathmandu (Fig. 2), where it has been collected at altitudes of 3000–3250 m.

***Lathrobium kleebergi* sp. n.** (Figs 2, 18–22, 296–297)

Type material. Holotype ♂: "Ost-Nepal, Rolwaling Himal / Rolwaling Ufer zw. Simigaon u. Nyimare 2700 m, 17.05.2000 leg. A. Kleeberg / Holotypus ♂ *Lathrobium kleebergi* sp. n. det. V. Assing 2011" (cAss). Paratypes: 1 ex.: same data as holotype (cKle); 9 exs.: "Ost-Nepal, Rolwaling Himal / Rolwaling Tal, Nyimare, 3300 m, 19.05.2000, leg. A. Kleeberg" (cKle, cAss); 3 exs.: "Ost-Nepal, Rolwaling Himal / Nyimare, 3000 m, 18.05.2000, leg. A. Kleeberg" (cKle); 3 exs.: "Ost-Nepal, Rolwaling Himal / oberh. Simigaon, 2700-2800 m, 31.05.2000, leg. A. Kleeberg" (cKle); 15 exs.: same data, but "01.06.2000" (cKle, cAss); 14 exs.: "Ost-Nepal, Rolwaling Himal / westl. Daldung La Pass, 3300 m, 28.05.2000, leg. A. Kleeberg" (cKle, cAss); 1 ex.: same data, but "29.05.2000" (cKle); 13 exs.: same data, but 30.05.2000" (cKle, cAss); 1 ex.: "Nepal, Rolwaling Himal, upp. Simigaon vill. 2400-2700 m, 01.06.2000, leg. J. Schmidt" (cKle); 14 exs.: "upp. Simigaon vill., ca. 3300 m, 28.05.2000, leg. J. Schmidt" (cKle, cAss); 8 exs.: "Nepal, Rolwaling Himal, upp. Simigaon vill. 2700-2800 m, 01.06.2000, leg. J. Schmidt" (cKle, cAss); 4 exs.: "Nepal, Rolwaling vall. Dugong Kharka, 2700-2800 m, 17.05.2000, leg. J. Schmidt" (cKle, cAss); 8 exs.: "Nepal, Rolwaling vall., bef. Beding vill., 3300 m, 19.05.2000, leg. J. Schmidt" (cKle, cAss).

Description. Body length 7–8 mm; length of forebody 3.0–3.5 mm. Coloration: body dark-brown to blackish-brown, with the abdominal apex, often the elytra, and sometimes also the head paler brown; legs pale-reddish to reddish-brown; antennae reddish, apical half often somewhat infuscate.

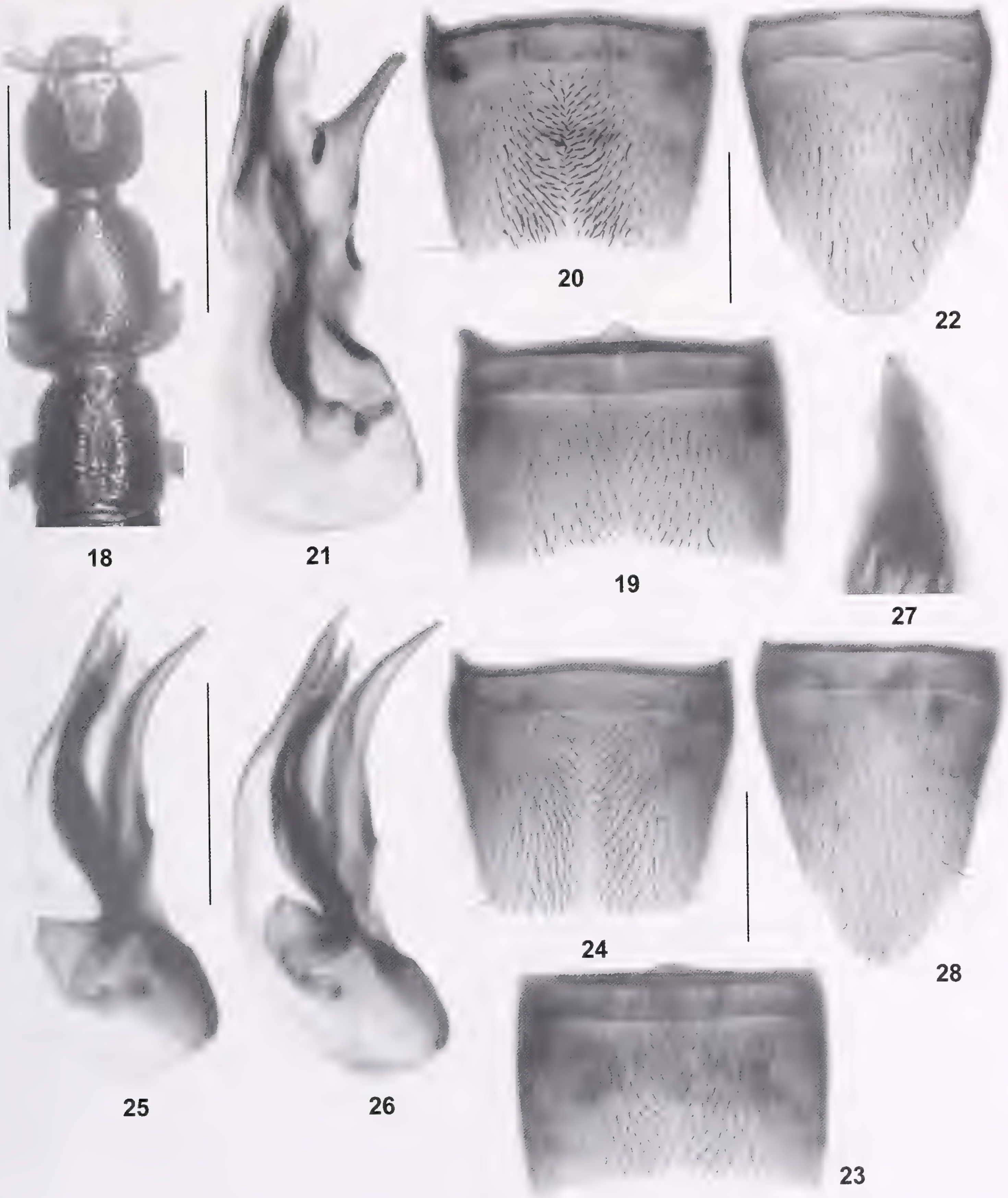
Head (Fig. 18) approximately as long as broad or weakly transverse; punctation moderately coarse, sparse in median dorsal portion, somewhat less sparse in posterior and lateral portions, but interstices on average broader than diameter of punctures; interstices with fine microreticulation. Eyes weakly projecting from lateral contours of head, small, 1/4–1/3 times as long as postocular region in dorsal view.

Pronotum (Fig. 18) 1.10–1.15 times as long as broad and 1.05–1.10 times as broad as head, strongly convex in cross-section; punctation and microsculpture similar to those of head.

Elytra short, 0.55–0.60 times as long as pronotum (Fig. 18); humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Protarsomeres I–IV dilated in both sexes, but more so in male than in female.

Abdomen broader than elytra; punctation fine and moderately dense; posterior margin of tergite VII without palisade fringe.

♂: posterior margin of tergite VIII truncate to weakly convex; sternite VII weakly impressed in postero-median portion, posterior margin broadly and weakly concave (Fig. 19); sternite VIII broadly impressed along the middle, the impression with numerous modified setae, poste-



Figs 18–28. *Lathrobium kleebergi* (**18–22**) and *L. ignoratum* (**23–28**). **18:** forebody; **19, 23:** male sternite VII; **20, 24:** male sternite VIII; **21, 25–26:** aedeagus in lateral view; **22, 28:** female sternite VIII; **27:** apical portion of aedeagus in ventral view. Scale bars: 18: 1.0 mm; 19–28: 0.5 mm.

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rior margin weakly concave, without distinct median incision (Fig. 20); aedeagus (Fig. 21) approximately 1.0–1.1 mm long, with slender and apically acute ventral process, and with lamellate dorsal plate.

♀: posterior margin of tergite VIII weakly angled in the middle; sternite VIII much longer than tergite VIII, distinctly produced posteriorly, posteriorly finely pubescent (Fig. 22); tergite IX not divided in the middle; tergite X approximately as long as tergite IX in the middle, or nearly so.

Comparative notes. *Lathrobium kleebergi* is highly similar and closely related to *L. nepalense*, *L. lassallei*, and other species of the *L. nepalense* group. It is reliably distinguished from them by the male primary and secondary sexual characters, from most of them also by the absence of a median suture of the female tergite IX.

Etymology. The species is dedicated to Andreas Kleeberg, who, together with Joachim Schmidt, collected the type specimens.

Distribution and natural history. *Lathrobium kleebergi* is currently known from several localities in the Rolwaling Himal in eastern Nepal (Fig. 2), where the specimens were collected at altitudes of 2400–3300 m (Figs 296–297). In one locality, the species was found together with *L. excisum*. One of the dissected females had a mature egg in the ovaries.

Lathrobium ignoratum sp. n. (Figs 2, 23–28)

Type material. Holotype: "Nepal Rasuwa Dis., north slope above Syabru 3600 m, 18.IV.85 A. Smetana / Holotypus ♂ *Lathrobium ignoratum* sp. n., det. V. Assing 2012" (cSme). Paratypes: 5 exs.: same data as holotype (cSme, cAss); 5 exs.: same data, but "19.IV.85" (cSme); 5 exs.: same data, but "3650 m, 17.IV.85" (cSme, cAss); 2 exs.: same data, but 3800 m, 18.IV.85" (cSme); 1♂: "Wald unterhalb Fulung / Pa 175 [overleaf] / Zentral-Nepal, Sept.–Okt. 1971, lg. H. Franz / Paratype [of *L. nepalense*]" (NHMW).

Description. Length of forebody 3.35 mm. External characters highly similar to those of *L. nepalense* and allied species.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII very weakly convex; sternite VII weakly impressed in postero-median portion, this impression with moderately dense black setae, posterior margin broadly and weakly concave (Fig. 23); sternite VIII impressed along the middle, this impression with numerous long black setae, posterior margin shallowly concave in the middle (Fig. 24); aedeagus 1.0–1.1 mm long, with slender and apically acute ventral process, and with distinctly sclerotised, lamellate dorsal plate (Figs 25–27).

♀: protarsomeres I–IV dilated, but less so than in male; posterior margin of tergite VIII weakly, obtusely angled in the middle; sternite VIII convexly produced and finely pubescent posteriorly (Fig. 28); tergite IX with fine median suture; tergite X distinctly longer than tergite IX in the middle.

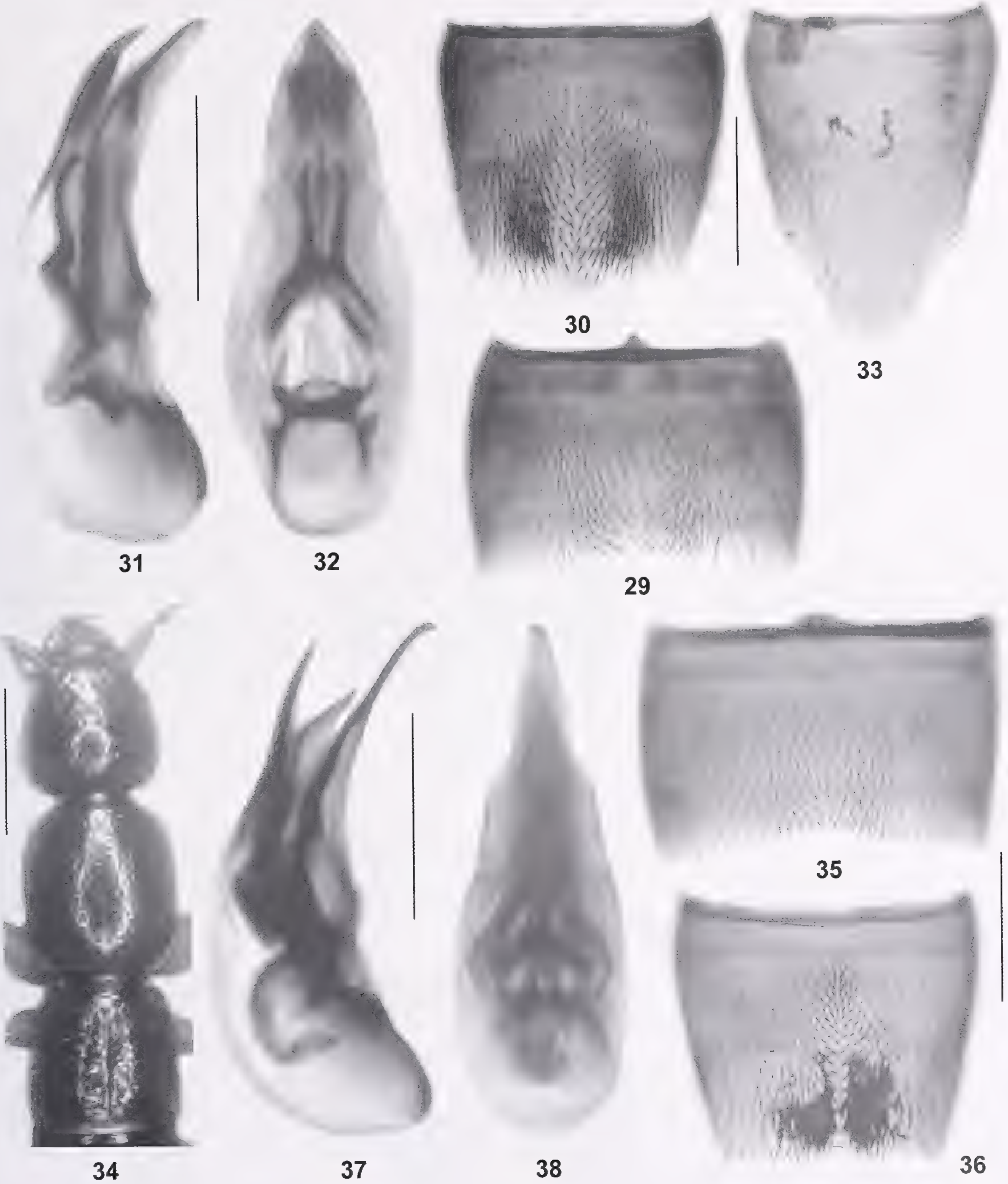
Comparative notes. The similar external and sexual characters suggest that *L. ignoratum* is closely related to *L. nepalense* and allied species, from which it is distinguished by the shape and chaetotaxy of the male sternites VII and VIII, as well as by the morphology of the aedeagus. From *L. nepalense*, with which it was previously confounded, it is separated by slightly smaller body size, the less transverse male sternite VII, the less dense and finer setae in the posterior impression of the male sternite VII, the absence of setae in the middle of the impression of the male sternite VIII, the absence of dense clusters of setae near the middle of the posterior margin of sternite VIII, as well as by the smaller aedeagus with a differently shaped ventral process and a differently shaped dorsal plate.

Etymology. The specific epithet (Latin, past participle of ignorare: to mistake, to confound) alludes to the fact that the paratype of *L. nepalense* from Fulung, now paratype of *L. ignoratum*, was previously both missexed and misidentified.

Distribution and natural history. The species was found near Syabru [28°10'N, 85°20'E] and near the Fulung Monastery [28°07'N, 85°20'E], to the north of Kathmandu, central Nepal (Fig. 2). The specimens from Syabru were collected at an altitude of 3600–3800 m. According to Franz′ diary, the specimen from Fulung was sifted from dry and slightly mouldy leaf litter in an old oak forest with rhododendron forest with scattered pine and fir on 11.X.1971.

Lathrobium exsertum sp. n. (Figs 3, 29–33)

Type material. Holotype ♂: "Nepal (Prov. Bagmati), Yangri Ridge, 4200 m, 21.IV.81, Löbl & Smetana / Holotypus ♂ *Lathrobium exsertum* sp. n., det. V. Assing 2012" (cSme). Paratypes: 3♂♂, 1♀ [1 slightly teneral]: same data as holotype (cSme, cAss); 3♂♂, 1♀: "Nepal (Prov. Bagmati), Yangri Ridge, 4350 m, 22.IV.81, Löbl & Smetana" (cSme, cAss); 1♂, 3♀♀: "Nepal (Prov. Bagmati), Yangri Ridge, 4700–4800 m, 22.IV.81, Löbl & Smetana" (cSme, cAss); 3♂♂ [1 teneral]: "Nepal Newakot Di., betw. Ghopte and Thare Pati, 3220 m, 23.IV.85 A. Smetana" (cSme, cAss); 3♂♂: same data, but "3150 m, 24.IV.85"



Figs 29–38. *Lathrobium exsertum* (**29–33**) and *L. compressum* (**34–38**). **29, 35:** male sternite VII; **30, 36:** male sternite VIII; **31, 37:** aedeagus in lateral view; **32, 38:** aedeagus in ventral view; **33:** female sternite VIII; **34:** forebody. Scale bars: 34: 1.0 mm; 29–33, 35–38: 0.5 mm.

(cSme, cAss); 1♂, 2♀♀: same data, but "3100 m, 24.IV.85" (cSme); 1♂: same data, but "3150 m, 25.IV.85" (cSme); 1♂, 1♀: same data, but "3200 m, 26.IV.85" (cSme, cAss).

Description. Body length 6.3-8.5 mm; length of forebody 3.1-3.7 mm. External characters as in *L. nepalense*.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII weakly convex in the middle; sternite VII impressed along middle, this impression with moderately dense black setae, posterior margin broadly and weakly concave (Fig. 29); sternite VIII impressed along the middle, this impression with moderately dense black setae, on either side of median impression with extensive cluster of conspicuously dense black setae, posterior margin produced in the middle (Fig. 30); aedeagus (Figs 31–32) approximately 1.3 mm long, ventral process moderately slender in lateral view and broad in ventral view; dorsal plate lamellate, but distinctly sclerotised.

♀: protarsomeres I–IV dilated, but less so than in male; posterior margin of tergite VIII obtusely angled in the middle; sternite VIII distinctly produced and finely pubescent posteriorly (Fig. 33); tergite IX with fine median suture; tergite X much longer than tergite IX in the middle.

Comparative notes. *Lathrobium exsertum* is distinguished from the similar, geographically close, and partly even syntopic *L. nepalense* by the completely different shape and chaetotaxy of the male sternite VIII, the shorter, less acute (lateral view), a much broader ventral process of the aedeagus (ventral view), and by the posteriorly more produced female sternite VIII.

Etymology. The specific epithet (Latin, past participle of exserere: to extend, to stick out) refers to the posteriorly distinctly produced female sternite VIII, the only character distinguishing female *L. exsertum* from female *L. nepalense*.

Distribution and natural history. The specimens were collected in the Yangri ridge, some 25 km to the east of Thare Pati, and between Ghopte and Thare Pati (Fig. 3) at altitudes of 3100–4800 m. Some of the beetles are noticeably teneral. Between Ghopte and Thare Pati, *L. exsertum* was found together with *L. nepalense*.

Lathrobium compressum sp. n. (Figs 2, 34–38)

Type material. Holotype ♂: "Nepal (Prov. Bagmati), above Shermathang, 2900 m, 26.IV.81, Löbl & Smetana / Holotypus ♂ *Lathrobium compressum* sp. n., det. V. Assing 2011" (MHNG). Paratypes: 1♂, 1♀: same data as holotype (MHNG, cAss).

Description. Body length 7.0–7.7 mm; length of forebody 3.4–3.6 mm. External characters highly similar to those of *L. nepalense*, except for the larger average body size and the very shallow, almost obsolete microreticulation on the head and pronotum (Fig. 34).

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII truncate; sternite VII weakly impressed in postero-median portion, posterior margin broadly and weakly concave (Fig. 35); sternite VIII impressed along the middle, this impression with numerous weakly modified setae, posteriorly with patch of dense dark setae on either side of middle, posterior margin weakly concave, with very small and shallow median incision (Fig. 36); aedeagus approximately 1.3 mm long, with very slender and apically acute ventral process, and with distinctly sclerotised, lamellate dorsal plate (Figs 37–38).

♀: protarsomeres strongly dilated, only slightly less so than in male; posterior margin of tergite VIII weakly convex in the middle; sternite VIII much longer than tergite VIII, distinctly produced and finely pubescent posteriorly, of similar shape as that of *L. kleebergi*; tergite IX with fine median suture; tergite X distinctly longer than tergite IX in the middle.

Comparative notes. The similar external and sexual characters suggest that *L. compressum* is closely related to *L. nepalense*, *L. lassallei*, and allied species, from which it is distinguished by slightly larger average body size, shallower microreticulation of the head and pronotum, and particularly by the male sexual characters.

Etymology. The specific epithet (Latin, adjective) alludes to the dorso-ventrally strongly compressed ventral process of the aedeagus.

Distribution and natural history. The type locality is situated near Shermathang in the Bairavkund Lekh, some 55 km NNE of Kathmandu, in Bagmati province (Fig. 2). The specimens were collected at an altitude of 2900 m.

Lathrobium khumbuense Coiffait, 1982 (Figs 2, 39–42)

Lathrobium khumbuensis [sic] Coiffait, 1982a: 90.

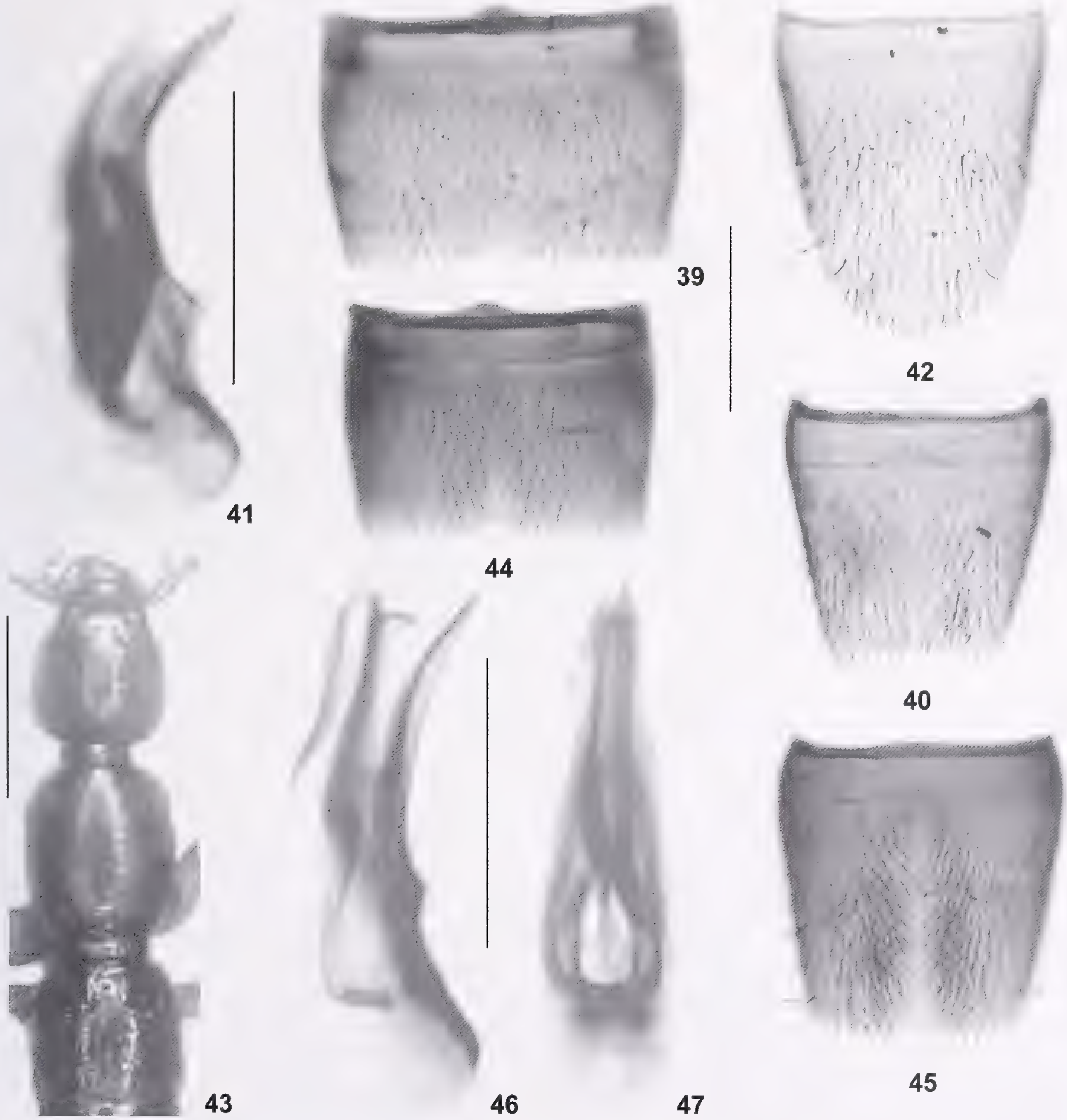
Type material examined. Holotype ♀: "Umg. Lughla, Khumbu, Nepal, lg. H. Franz / Pa 260 [overleaf] / Type / Lathrobium khumbuensis H. Coiffait 1979 / Lathrobium khumbuense Coiffait, det. V. Assing 2011" (NHMW). Paratype ♀ [teneral]: same data as holotype (MNHNP).

Comment. The original description is based on a holotype and a paratype, both females, from "Népal, environs de Lughla, Khumbu" (Coiffait 1982a) deposited in the collections at the NHMW and in the Coiffait collection at the MNHNP, respectively. The male sexual characters were described by Coiffait (1983), based on a specimen that was evidently collected together with the types, as can be inferred from Franz′ identical sample number ("Pa 260"). This specimen was erroneously labelled by Coiffait as the allotype; it does not have type status, since it was not included in the original description.

Additional material examined. Nepal: 1♂, Khumbu, Lughla env., "Alm Dugdinma, 3000–4000 m, leg. Franz, "Pa 260", "Allotype" (MNHNP).

Redescription. Species of moderate size; body length 5.6–6.5 mm; length of forebody 2.5–2.8 mm. Coloration: head and pronotum dark-brown; elytra reddish to brown; abdomen reddish-brown to brown; legs and antennae reddish.

Head approximately as broad as long; punctation coarse and rather sparse, even sparser in median dorsal portion; interstices with distinct microreticulation, almost matt, on average broader than diameter of punctures. Eyes moderately small and not distinctly projecting from lateral con-



Figs 39–47. *Lathrobium khumbuense* (**39–42**) and *L. nepalorientis* (**43–47**). **39, 44:** male sternite VII; **40, 45:** male sternite VIII; **41, 46:** aedeagus in lateral view; **42:** female sternite VIII; **43:** forebody; **47:** aedeagus in ventral view. Scale bars: 43: 1.0 mm; 39–42, 44–47: 0.5 mm.

tours of head, approximately 1/3 the length of postocular region in dorsal view and composed of numerous (> 30) ommatidia.

Pronotum broad, short, and strongly convex in cross-section, approximately 1.15 times as long as broad and approximately as broad as head; lateral margins straight and almost subparallel, only indistinctly converging posteriad; punctation similar to that of head; interstices with pronounced microreticulation and almost matt.

Elytra short, approximately 0.55 times as long as pronotum; humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia weakly compressed.

Abdomen broader than elytra, widest at segment VI; punctation dense and not particularly fine; interstices with finely transverse microsculpture; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV moderately dilated; posterior margin of tergite VIII indistinctly angled in the middle; sternite VII moderately transverse, with shallow median impression, without modified pubescence, and with weakly concave posterior margin (Fig. 39); sternite VIII weakly transverse, with long black pubescence in posterior half, posterior margin very weakly concave, almost truncate, and without median excision (Fig. 40); aedeagus approximately 0.9 mm long, with long, slender, and apically acute ventral process, with a lamellate, weakly sclerotised dorsal plate, and with dark membranous internal structures (Fig. 41).

♀: protarsomeres I–IV almost as dilated as in male; tergite VIII of similar shape as in male; sternite VIII distinctly longer than tergite VIII, with convex posterior margin, at posterior margin with fine pubescence (Fig. 42); tergite IX with fine median suture; tergite X somewhat longer than tergite IX in the middle.

Comparative notes. As can be inferred from external (head and pronotum with pronounced microreticulation; eyes with numerous ommatidia; short and convex pronotum) and sexual characters (sternite VII without distinctly modified pubescence and posterior margin; sternite VIII without posterior excision and without distinctly modified setae; general morphology of the aedeagus without sclerotised internal structures and with weakly sclerotised dorsal plate), *L. khumbuense* is closely related to *L. nepalense* and allied species. It is distinguished from them by smaller size and by the male primary and secondary sexual characters.

Distribution and natural history. *Lathrobium khumbuense* is currently known only from the type locality near "Lughly", today probably Lukla (27°41'N, 86°43'E) in Khumbu, eastern Nepal (Fig. 2), where the type specimens were collected at an altitude of 3000–4000 m. The paratype is teneral.

***Lathrobium nepalorientis* Coiffait, 1984** (Figs 2, 43–47)
Lathrobium nepalorientis Coiffait, 1984: 381 f.

Type material examined. Holotype ♂: "Nepal or. 7.83, Jaljale Himal 4000 m / Type / Lathrobium nepalorientis H. Coiffait / Lathrobium nepalorientis Coiffait, det. V. Assing 2011" (MNHNP). Paratype ♂: see holotype of *L. milkeense*.

Comment. The original description is based on a male holotype from "Népal oriental, Jaljale Himal 4000 m" and a paratype ("une femelle") from "Milke Himal, 2500 m" deposited in the Coiffait collection at the MNHNP (Coiffait 1984). An examination of the two type specimens revealed that the paratype is in fact a male and that it is not conspecific with the holotype.

Redescription. Species of moderate size; body length 6.1 mm; length of forebody 2.9 mm. Coloration: forebody brown; abdomen blackish-brown to brown; legs and antennae reddish.

Head (Fig. 43) approximately as broad as long; punctation coarse and rather sparse, even sparser in median dorsal portion; interstices with distinct microreticulation, distinctly broader than diameter of punctures.

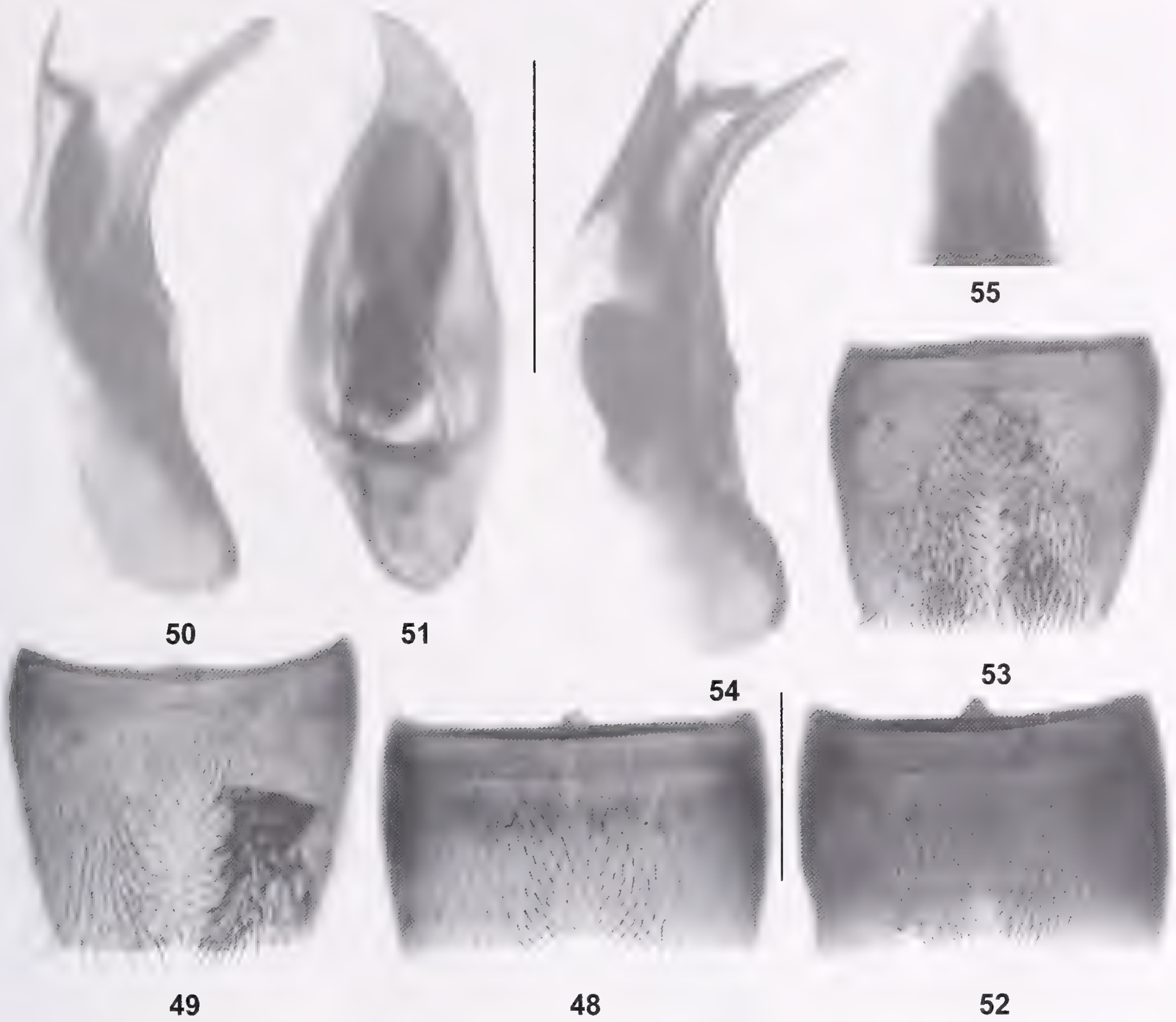
Other external characters as in *L. khumbuense*.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII indistinctly angled in the middle; sternite VII moderately transverse, with shallow median impression, without modified pubescence, and with weakly concave posterior margin (Fig. 44); sternite VIII as long as wide, with long median impression, on either side of middle with dense black setae, posterior margin with very shallow, almost indistinct median excision (Fig. 45); aedeagus 1 mm long, with slender, weakly curved (lateral view), and apically acute ventral process and with weakly sclerotised, lamellate dorsal plate (Figs 46–47).

♀: unknown.

Comparative notes. *Lathrobium nepalorientis* is reliably distinguished from the similar *L. khumbuense* only by the male sexual characters, particularly the shape and chaetotaxy of the male sternite VIII and the shape of the ventral process of the slightly larger aedeagus.

Distribution and natural history. This species is currently known only from the type locality, the Jaljale Himal in eastern Nepal (Fig. 2), where the holotype was collected at an altitude of 4000 m.



Figs 48–55. *Lathrobium janetscheki* (**48–51**) and *L. milkeense* (**52–55**). **48, 52:** male sternite VII; **49, 53:** male sternite VIII; **50, 54:** aedeagus in lateral view; **51:** aedeagus in ventral view; **55:** apical portion of aedeagus in ventral view. Scale bars: 0.5 mm.

Lathrobium janetscheki **Scheerpeltz, 1976** (Figs 2, 48–51)
Lathrobium (Glyptomerodoschema) janetscheki Scheerpeltz, 1976: 29 ff.

Type material examined. Holotype ♂ [somewhat damaged]: "♂ / Himalaya-Expedition Prof. Dr. Janetschek 1961 nach Nepal / loc. 51. / Lathrobium (Glyptomerodoschema n. subg.) Janetscheki n. sp. / Holotypus / Typus Lathrobium (Glyptomerodoschema) Janetscheki O. Scheerpeltz / Lathrobium (Glyptomerodoschema n. subg.) Janetscheki n. sp., det. Scheerpeltz / Lathrobium janetscheki Scheerpeltz, det. V. Assing 2011" (ZII).

Comment. The original description is based on a unique male holotype from "Basislager Yaral (Pangpoche)" (Scheerpeltz 1976). The specimen, which is in rather poor condition, is deposited in the collections of the ZII.

Scheerpeltz (1976) described the subgenus *Glyptomerodoschema* to accommodate the type species *Lathrobium janetscheki* Scheerpeltz, 1976, stating that the subgenus was distinguished from other species groups of the *Lathrobium* s. str. by the short elytra, reduced hind wings and small eyes, and from *Glyptomerus* Müller, 1856 by the presense of ommatidia. Coiffait (1982b) already argued that attributing the depigmented, micropterous, and microphthalmous Himalayan *Lathrobium* species to a subgenus of their own was unjustified. Such adaptive reductions are known from several species groups in *Lathrobi-*

um both in the West and in the East Palaearctic regions. Moreover, attributing *L. janetscheki* to a subgenus of its own would undoubtedly render the nominate subgenus paraphyletic. Therefore, *Glyptomerodoschema* is placed in synonymy with *Lathrobium*.

Redescription. External characters as in *L. nepalorientis* and *L. nepalense*.

♂: protarsomeres I-IV strongly dilated; sternite VII strongly transverse, with median impression of triangular shape and with relatively long dark setae, posterior margin weakly concave (Fig. 48); sternite VIII moderately transverse and with pronounced, sparsely pubescent median impression, on either side of this impression with dense dark setae, posterior margin weakly concave in the middle (Fig. 49); aedeagus 1 mm long, ventral process strongly asymmetric in ventral view (Figs 50–51).

♀: unknown.

Comparative notes. *Lathrobium janetscheki* is evidently closely related to *L. nepalorientis* and *L. khumbuense*, as can be inferred particularly from the similar modifications of the male sternites VII and VIII, as well as from the similar morphology of the aedeagus and similar external characters. It is readily distinguished from its close relatives especially by the strongly asymmetric ventral process of the aedeagus.

Distribution and natural history. The type locality is situated near Pangpoche [27°51'N, 86°48'E] in the Mount Everest region, eastern Nepal (Fig. 2). The holotype was sifted from rhododendron litter and grass in April.

Lathrobium milkeense sp. n. (Figs 2, 52–55)

Type material. Holotype ♂: "Népal or. 7-83, Milke Himal, 2500 m / Allotype [of *L. nepalorientis*] / Holotypus ♂ *Lathrobium milkeense* sp. n., det. V. Assing 2011" (MNHNP).

Description. External characters as in *L. nepalorientis*.

♂: protarsomeres I–IV strongly dilated; sternite VII strongly transverse, with median impression with relatively long dark setae, posterior margin weakly concave (Fig. 52); sternite VIII moderately transverse, median impression oblong and with sparse, weakly modified dark setae, on either side of impression with dense dark setae, posterior margin weakly concave in the middle (Fig. 53); aedeagus 1.1 mm long, ventral process strongly curved in lateral view, dorsal plate relatively massive and strongly sclerotised, apically very acute and in the middle broad in dorsal view (Figs 54–55).

♀: unknown.

Comparative notes. As can be inferred from the similar external and male sexual characters, *L. milkeense* is closely allied to the *L. nepalorientis*, *L. khumbuense*, and *L. janetscheki*, but distinguished from them particularly by the morphology of the aedeagus, especially the shape of the ventral process and of the strongly sclerotised dorsal plate.

Etymology. The specific epithet (adjective) is derived from the name of the mountain range where the species was discovered.

Distribution and natural history. The type locality is situated in the Milke Himal in eastern Nepal (Fig. 2). The holotype was collected at an altitude of 2500 m.

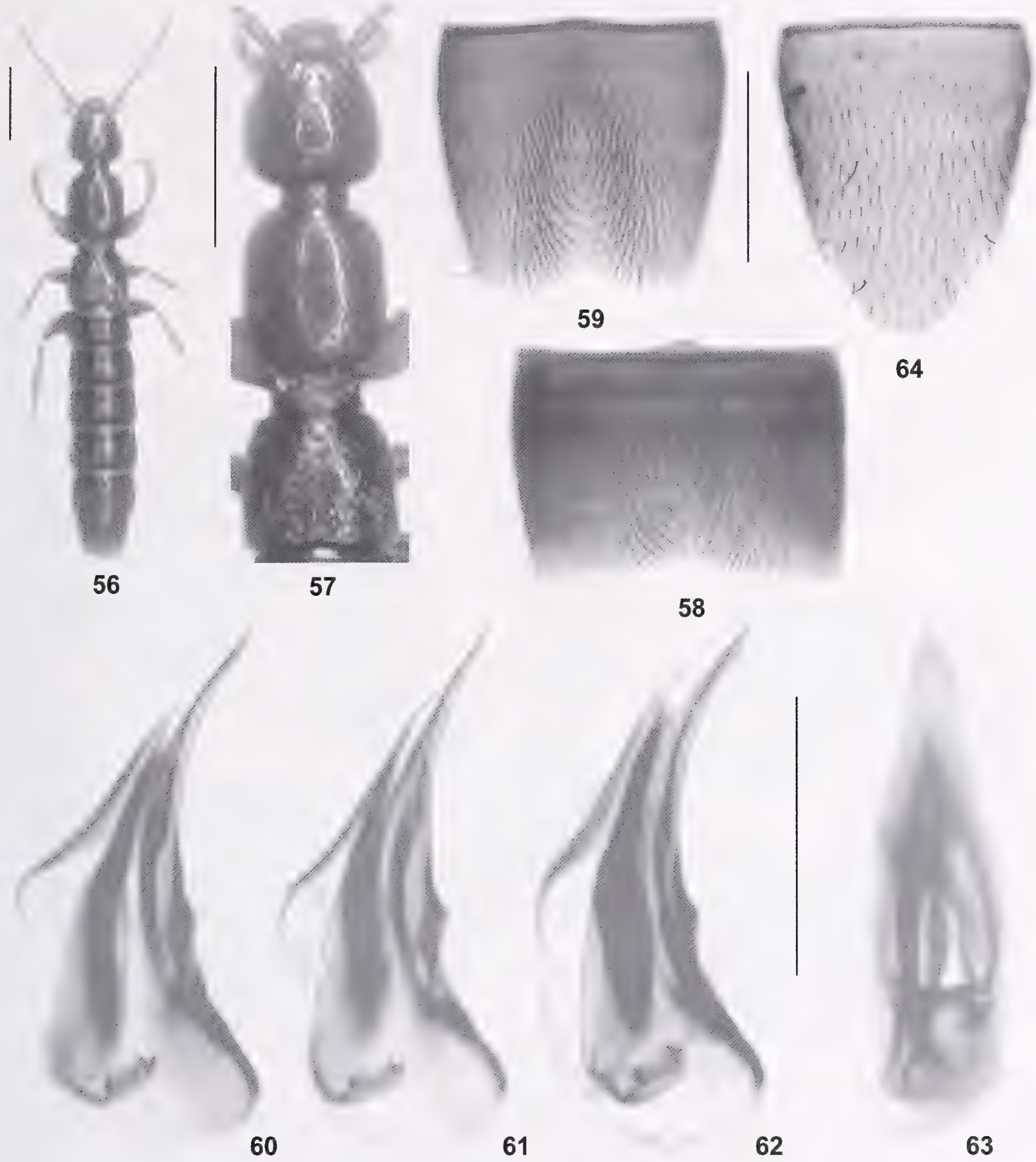
Lathrobium umbhakense sp. n. (Figs 3, 56–64)

Type material. Holotype ♂: "Nepal-Expeditionen Jochen Martens / 390 Sankhua Sabha Distr., Thudam, mixed forest mainly Betula/Rhododendron, 3550–3650 m, 25–27 May 88 J. Martens & W. Schawaller / Holotypus ♂ *Lathrobium umbhakense* sp. n., det. V. Assing 2011" (SMNS). Paratypes: 4♂♂, 2♀♀: same data as holotype (SMNS, cAss); 1♂, 1♀: "Nepal-Expeditionen Jochen Martens / 362 Taplejung Distr., upper Simbua Khola Valley, near Yalung, 3450-3700 m, mature *Abies-Rhododendron-Juniperus* forest, 13 May 1988 J. Martens & W. Schawaller leg." (SMNS); 2♂♂, 1♀: "Nepal-Expeditionen Jochen Martens / 387 Sankhua Sabha Distr., Kangla Khola E Thudam, dwarf *Rhododendron*, rock debris, 4100–4200 m, 24–25May88 Martens & Schawaller" (SMNS, cAss).

Description. Body length 5.3–6.7 mm; length of forebody 2.6–2.9 mm. Habitus and forebody as in Figs 56–57. Externally highly similar to *L. nepalorientis*.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII convex to indistinctly pointed in the middle; sternite VII strongly transverse, median impression with relatively long dark setae, posterior margin weakly concave (Fig. 58); sternite VIII moderately transverse, median impression oblong, not very deep, and with moderately sparse modified dark setae, on either side of impression with dense dark setae, posterior margin weakly concave in the middle (Fig. 59); aedeagus approximately 0.9–1.0 mm long, ventral process evenly curved and slender in lateral view, dorsal plate relatively large, but not massive and relatively weakly sclerotised (Figs 60–63).

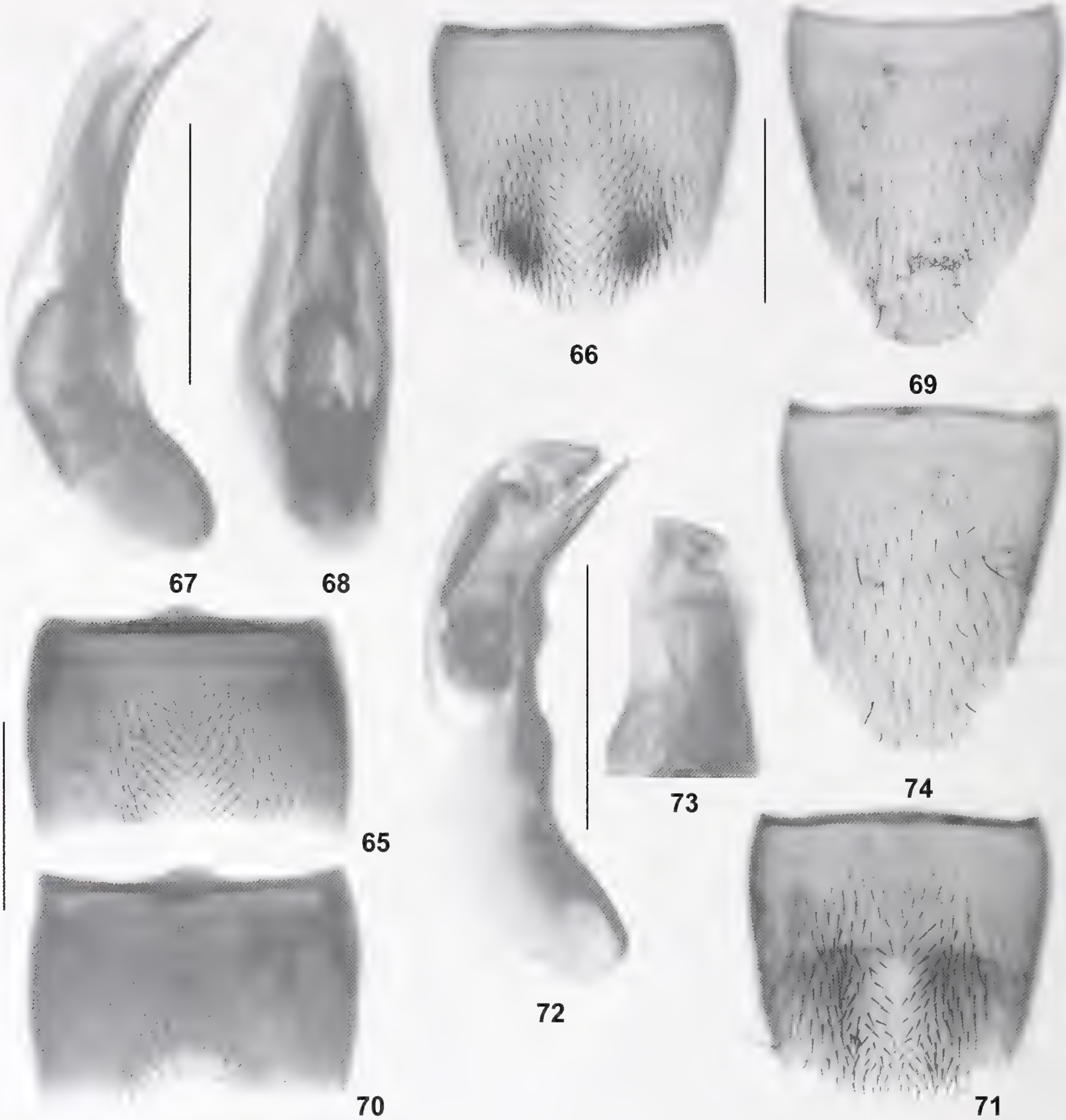
♀: protarsomeres I–IV dilated, but distinctly less so than in male; posterior margin of tergite VIII obtusely pointed in the middle; sternite VIII oblong, longer than tergite VIII, produced and with fine setae posteriorly (Fig. 64);



Figs 56–64. *Lathrobium umbhakense*. **56:** habitus; **57:** forebody; **58:** male sternite VII; **59:** male sternite VIII; **60–62:** aedeagus in lateral view; **63:** aedeagus in ventral view; **64:** female sternite VIII. Scale bars: 56–57: 1.0 mm; 58–64: 0.5 mm.

tergite IX not divided in the middle; tergite X slightly longer than tergite IX in the middle.

Comparative notes. As can be inferred from the similar external and male sexual characters, *L. umbhakense* is closely related to *L. nepalorientis* and allied species, but distinguished from them particularly by the morphology of the aedeagus, especially the shape of the ventral process and the dorsal plate (*L. nepalorientis*: male sternite VIII not transverse; aedeagus with ventral process of slightly different shape in lateral view and dorsal plate much smaller). It is additionally separated from the syntopic *L. inexcisum* by the anteriorly undivided female tergite IX.



Figs 65–74. *Lathrobium bibarbatum* (**65–69**) and *L. diremptum* (**70–74**). **65, 70:** male sternite VII; **66, 71:** male sternite VIII; **67, 72:** aedeagus in lateral view; **68:** aedeagus in ventral view; **69, 74:** female sternite VIII; **73:** apical portion of aedeagus in ventral view. Scale bars: 0.5 mm.

Etymology. The specific epithet (adjective) is derived from the name of the mountain range where the species is probably endemic.

Distribution and natural history. The species was found in three localities near Thudam and Yalung in the very northeast of Nepal, close to the border with Tibet (Fig. 3). The specimens were collected in a mixed forest with rhododendron, from rock debris, and litter of dwarf rhododendron at altitudes of 3450-4200 m, in one locality together with *L. inexcisum*.

***Lathrobium bibarbatum* sp. n.** (Figs 3, 65–69)

Type material. Holotype ♂: "Nepal-Expeditionen Jochen Martens / 380 Taplejung Distr., above Walungchung Gola, open *Abies-Betula* forest, 3400–3600 m, 21 May 1988

©ZFMK

J. Martens & W. Schawaller / Holotypus ♂ *Lathrobium bibarbatum* sp. n., det. V. Assing 2011" (SMNS). Paratypes: 1♂, 1♀: same data as holotype (SMNS, cAss).

Description. Body length 7.0–7.5 mm; length of forebody 3.1–3.2 mm. Whole body dark-reddish. Externally highly similar to *L. nepalorientis*, but eyes less convex, slightly smaller, and composed of < 30 ommatidia.

♂: protarsomeres I–IV strongly dilated; sternite VII strongly transverse, median impression with relatively long dark setae, posterior margin very weakly concave (Fig. 65); sternite VIII weakly transverse and with pronounced, deep, wide, long median impression with sparse black setae, on either side of this impression with conspicuous cluster of dense dark setae, posterior margin produced in the middle, not concave or incised (Fig. 66); aedeagus 1.1 mm long, ventral process evenly curved, slender, and apically acute in lateral view, dorsal plate long, lamellate, and weakly sclerotised (Figs 67–68).

♀: protarsomeres I–IV dilated, but less so than in male; sternite VIII oblong, longer than tergite VIII, convexly produced and with micropubescence posteriorly (Fig. 69); tergite IX with median suture; tergite X distinctly longer than tergite IX in the middle.

Comparative notes. Based on the external and sexual characters, *L. bibarbatum* is closely related to *L. nepalorientis* and allied species. It is distinguished from them particularly by the conspicuous shape and chaetotaxy of the male sternite VIII and by the morphology of the aedeagus (shapes of ventral process and of dorsal plate).

Etymology. The specific epithet (Latin, adjective: with two beards) alludes to the conspicuous clusters of dark setae on the male sternite VIII.

Distribution and natural history. The type locality is situated in Taplejung district, in the very northeast of Nepal (Fig. 3). The specimens were collected in an open fir and birch forest at an altitude of 3400–3600 m.

Lathrobium diremptum sp. n. (Figs 2, 70–74)

Type material. Holotype ♂: "Nepal-Expeditionen Jochen Martens / 361 Taplejung Distr., upper Simbua Khola Valley, near Tseram, 3250–3350 m, mature *Abies-Rhododendron* forest, 10–15 May 88 J. Martens & W. Schawaller leg. / Holotypus ♂ *Lathrobium diremptum* sp. n., det. V. Assing 2011" (SMNS). Paratype ♀: "Nepal-Expeditionen Jochen Martens / 359 Taplejung Distr., pasture Lassetham NW Yamputhin, 3300-3500 m, mature *Abies-Rhododendron* forest, 6–9 May 1988 J. Martens & W. Schawaller leg." (cAss).

Description. Body length 7.0–7.2 mm; length of forebody 3.1–3.3 mm. Externally indistinguishable from *L. bibarbatum*.

♂: protarsomeres I–IV strongly dilated; sternite VII strongly transverse, median impression with relatively sparse, long dark setae, posterior margin very weakly concave in the middle (Fig. 70); sternite VIII weakly transverse and with moderately deep, wide, long median impression with sparse black setae, on either side of this impression with moderately dense dark setae, posterior margin convex, not concave or incised (Fig. 71); aedeagus approximately 1 mm long, ventral process evenly curved in lateral view, somewhat asymmetric, relatively broad, and apically acute in ventral view, dorsal plate moderately long, lamellate, and distinctly sclerotised (Figs 72–73).

♀: protarsomeres I-IV dilated, but less so than in male; sternite VIII oblong, longer than tergite VIII, convexly produced and with micropubescence posteriorly (Fig. 74); tergite IX with fine median suture; tergite X distinctly longer than tergite IX in the middle.

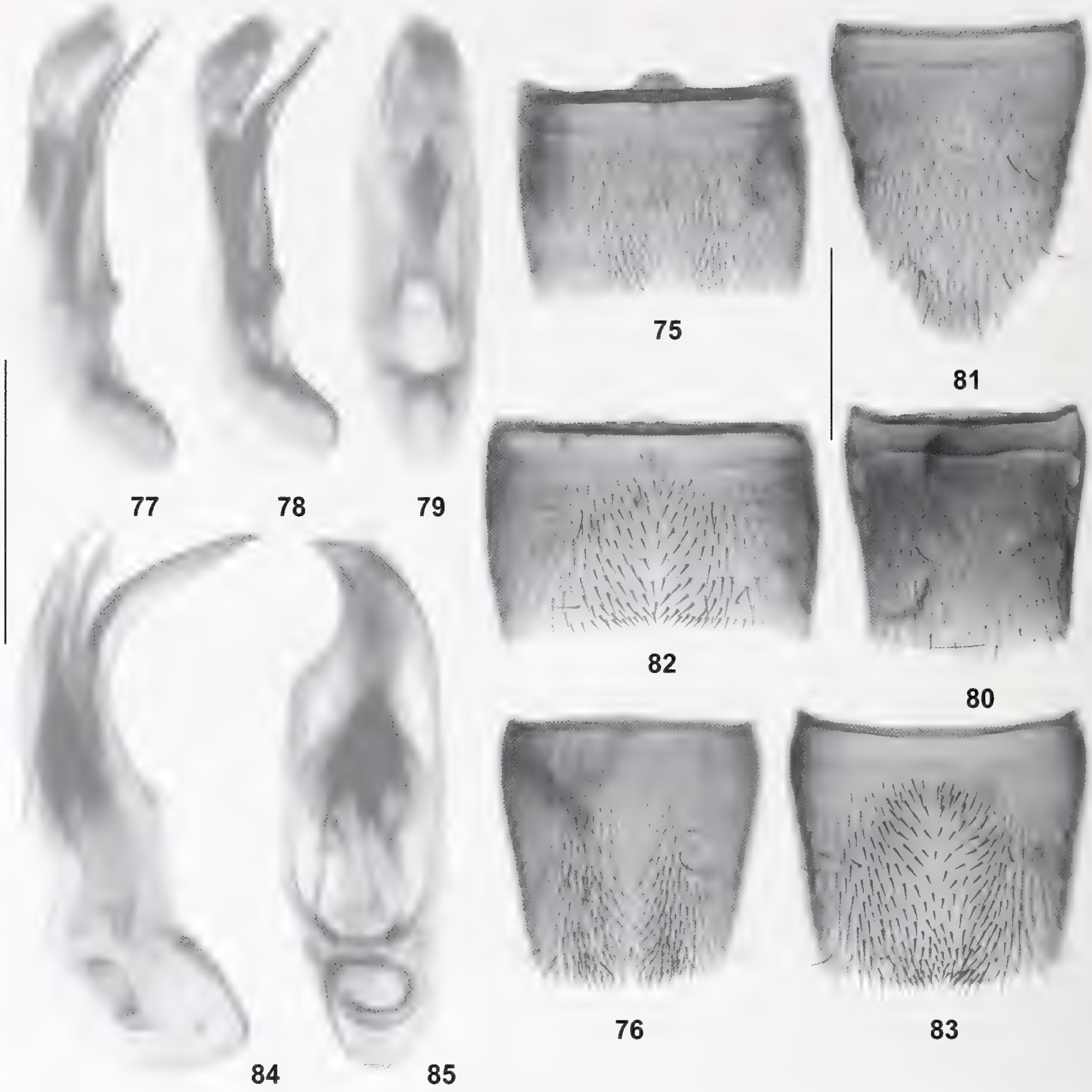
Comparative notes. *Lathrobium diremptum* is evidently most closely related to *L. bibarbatum*, as is suggested by the similar external morphology and particularly by the male and female sexual characters: the posteriorly convex male sternite VIII, the morphology of the aedeagus, and the anteriorly divided, but contiguous female tergite IX. It is distinguished from *L. bibarbatum* by the shape and chaetotaxy of the male sternite VIII (without pronounced cluster of dense dark setae on either side of middle; posterior margin less strongly produced), the shape of the male sternite VII (posterior margin concave in the middle), and by morphology of the aedeagus (ventral process broader and distinctly asymmetric in ventral view; dorsal plate shorter and more strongly sclerotised).

Etymology. The specific epithet (Latin, past participle of dirimere: to separate) alludes to the anteriorly divided female tergite IX.

Distribution and natural history. The type specimens were found in two localities near Tseram and near Yamputhin in Taplejung district, northeastern Nepal (Fig. 2). They were collected in mature fir and rhododendron forests at an altitude of 3250–3500 m.

Lathrobium inexcisum sp. n. (Figs 3, 75–81)

Type material. Holotype ♂: "Nepal-Expeditionen Jochen Martens / 361 Taplejung Distr., upper Simbua Khola Valley, near Tseram, 3250–3350 m, mature *Abies-Rhododendron* forest, 10–15 May 88 J. Martens & W. Schawaller leg. / Holotypus ♂ *Lathrobium inexcisum* sp. n., det. V.



Figs 75–85. *Lathrobium inexcisum* (**75–81**) and *L. infractum* (**82–85**). **75, 82:** male sternite VII; **76, 83:** male sternite VIII; **77–78, 84:** aedeagus in lateral view; **79, 85:** aedeagus in ventral view; **80:** female tergite VIII; **81:** female sternite VIII. Scale bars: 0.5 mm.

Assing 2011" (SMNS). Paratypes: 4♂♂, 4♀♀: same data as holotype (SMNS, cAss); 2♂♂: "Nepal-Expeditionen Jochen Martens / 362 Taplejung Distr., upper Simbua Khola Valley, near Yalung. 3450-3700 m, mature *Abies-Rhododendron-Juniperus* forest, 13 May 1988 J. Martens & W. Schawaller leg." (SMNS, cAss); 2♀♀ [1 teneral]: "Nepal-Expeditionen Jochen Martens / 359 Taplejung Distr., pasture Lassetham NW Yamputhin, 3300-3500 m, mature *Abies-Rhododendron* forest, 6–9 May 1988 J. Martens & W. Schawaller leg." (SMNS); 1♂: "Nepal-Expeditionen Jochen Martens / 275 Taplejung Dist., Alm Lassetham, *Abies-Rhododendron*-Wald, 3500 m, Berlese, 6–7 Sep83 Martens & Daams" (SMNS); 1♂: "Nepal-Expeditionen Jochen Martens / 277 Taplejung Dist. Khola, Yalung, 3450 m, 8Sep83 J. Martens" (SMNS); 1♂: "Nepal-Expeditionen Jochen Martens / 275 Taplejung Dist., Alm Lassetham, *Abies-Rhododendron*-Wald, 3500 m, Berlese, 6–7 Sep 83 Martens & Daams" (SMNS); 1♀: "Nepal-Expeditionen Jochen Martens / 367 Taplejung Distr., pass Deorali W Yamputhin, 3400 m, *Abies-Rhododendron* forest, 17 May 1988 J. Martens & W. Schawaller leg." (SMNS).

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Description. Body length 5.3–6.2 mm; length of forebody 2.3–2.6 mm. Coloration: head and pronotum reddish-brown to dark-brown; elytra reddish to reddish-brown; abdomen brown to blackish; legs reddish to brown; antennae reddish. Apart from the slightly smaller body size, externally highly similar to the preceding species.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII weakly convex to indistinctly angled in the middle; sternite VII distinctly transverse, median impression with long dark setae, posterior margin very weakly concave (Fig. 75); sternite VIII approximately as long as broad and with moderately deep, wide, long median impression with sparse black setae, on either side of this impression with moderately dense dark setae, posterior margin convex, not concave or incised (Fig. 76); aedeagus approximately 0.8 mm long, ventral process subapically bent in lateral view, relatively broad and apically acute in ventral view, dorsal plate lamellate, very thin, moderately long, and weakly sclerotised (Figs 77–79).

♀: protarsomeres I–IV dilated, but less so than in male; posterior margin of tergite VIII obtusely pointed in the middle (Fig. 80); sternite VIII oblong, longer than tergite VIII, strongly convexly produced and with micropubescence posteriorly (Fig. 81); tergite IX with median suture; tergite X distinctly longer than tergite IX in the middle.

Comparative notes. As can be inferred particularly from the similar shape of the male sternite VIII and the anteriorly divided female tergite IX, *L. inexcisum* is closely allied to *L. diremptum* and *L. bibarbatum*. It is distinguished from both species particularly by smaller body size, by the shape and chaetotaxy of the male sternite VIII, and by the distinctly smaller aedeagus with a ventral process and dorsal plate of different shapes. From the syntopic *L. umbhakense*, it is additionally separated by the anteriorly divided female tergite IX.

Etymology. The specific epithet (Latin, adjective) alludes to the absence of a posterior excision of the male sternite VIII.

Distribution and natural history. The type specimens were found in several localities near Tseram, Yalung, and Yamputhin in Taplejung district, northeastern Nepal (Fig. 3). They were collected in mature fir, rhododendron, and juniper forests at an altitude of 3250–3700 m, in one locality together with *L. umbhakense*. One female taken in early May is teneral.

***Lathrobium infractum* sp. n.** (Figs 3, 82–85)

Type material. Holotype ♂: "523 Nepal: Solukhumbu Distr., E Pangkongma La, 3000 m, 17.V.1997, leg. W. Schawaller / Holotypus ♂ *Lathrobium infractum* sp. n., det. V. Assing 2011" (SMNS). Paratypes: 1♀ [without abdominal apex]: same data as holotype (cAss).

Description. Body length 5.8 mm; length of forebody 2.6–3.0 mm. Whole body reddish. Externally highly similar to *L. umbhakense* and *L. bibarbatum*, except for the slightly larger eyes.

♂: protarsomeres I–IV strongly dilated; sternite VII strongly transverse, median impression with weakly modifed setae, posterior margin weakly concave (Fig. 82); sternite VIII weakly transverse and with extensive median impression with sparse black setae, without lateral clusters of dense dark setae, posterior margin convex, in the middle indistinctly concave (Fig. 83); aedeagus 1 mm long, ventral process long, sharply bent in lateral view, strongly asymmetric in ventral view, dorsal plate lamellate and weakly sclerotised (Figs 84–85).

♀: protarsomeres I–IV dilated, but less so than in male; other sexual characters not available (missing in paratype).

Comparative notes. Based on the external and sexual characters, *L. infractum* is closely related to *L. nepalorientis* and allied species. It is distinguished from them particularly by the weakly modified pubescence of the male sternites VII and VIII, the extensive impression on the male sternite VIII, as well as by the conspicuous shape of the ventral process of the aedeagus. From many of the related species, it is additionally separated by the slightly larger eyes.

Etymology. The specific epithet (Latin, adjective: flexed, broken) alludes to the conspicuous shape of the ventral process of the aedeagus.

Distribution and natural history. The type locality is situated in Solukhumbu district in eastern Nepal (Fig. 3). The specimens were collected at an altitude of 3000 m.

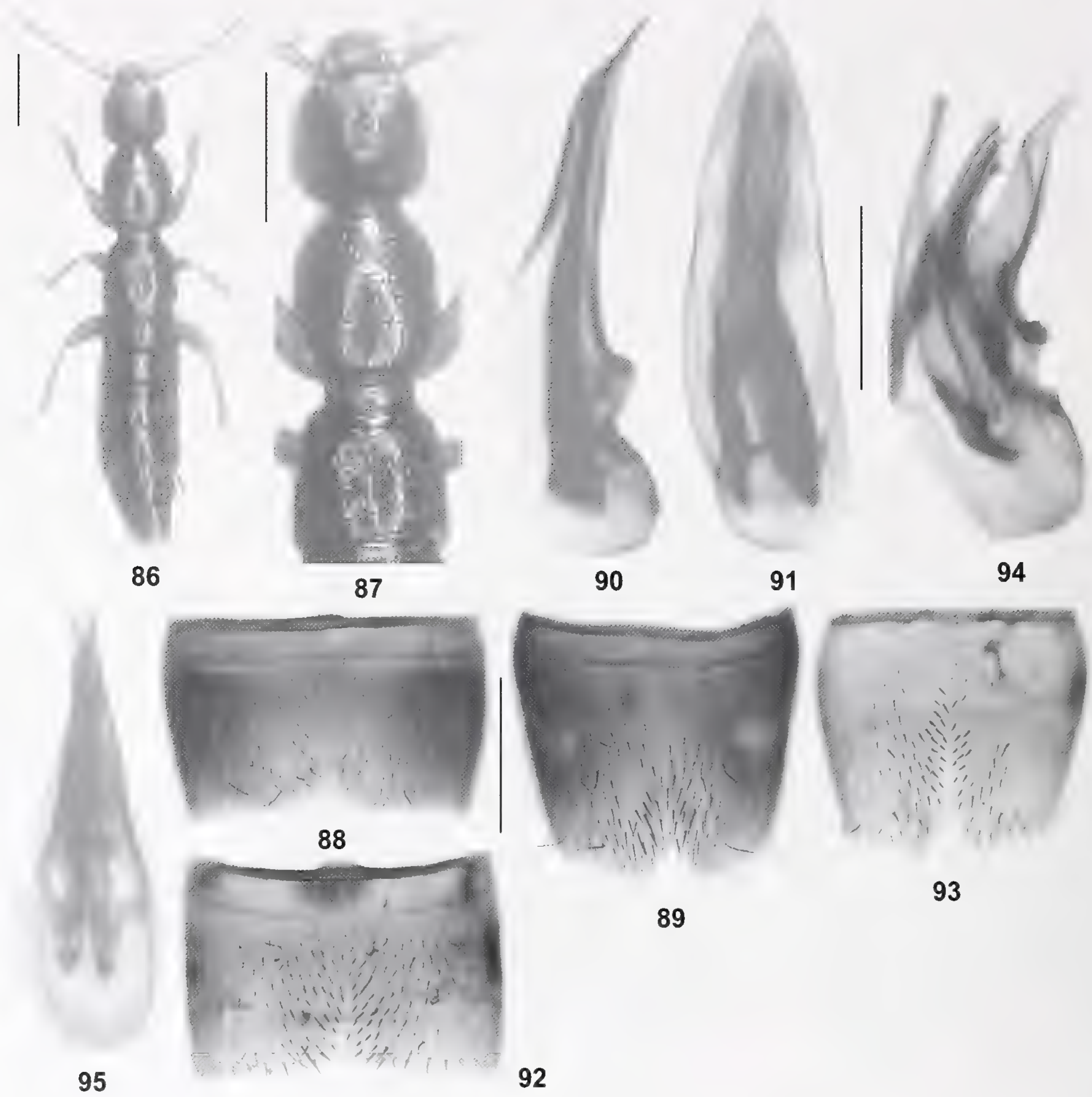
The *Lathrobium muguicum* group

***Lathrobium muguicum* sp. n.** (Figs 86–91, 96)

Type material. Holotype ♂: "576 Nepal: Mugu Distr., SW Rara Lake, 3200 m, 12.VI.1998, leg. W. Schawaller / Holotypus ♂ *Lathrobium muguicum* sp. n., det. V. Assing 2011" (SMNS).

Description. Body length 7 mm; length of forebody 3.4 mm. Habitus as in Fig. 86. Coloration: body blackish-brown; legs and antennae reddish.

Head (Fig. 87) as long as broad; punctation moderately coarse and not very dense; interstices with distinct microreticulation, on average somewhat broader than diameter of punctures, slightly sparser in median dorsal por-



Figs 86–95. *Lathrobium muguicum* (**86–91**) and *L. emodense* (**92–95**). **86:** habitus; **87:** forebody; **88, 92:** male sternite VII; **89, 93:** male sternite VIII; **90, 94:** aedeagus in lateral view; **91, 95:** aedeagus in ventral view. Scale bars: 86–87: 1.0 mm; 88–95: 0.5 mm.

tion. Eyes weakly projecting from lateral contours of head, approximately 1/3 the length of postocular region in dorsal view and composed of approximately 30 ommatidia.

Pronotum (Fig. 87) 1.18 times as long as broad and 1.04 times as broad as head; punctation similar to that of head, but slightly coarser; interstices without microsculpture.

Elytra short, approximately 0.6 times as long as pronotum (Fig. 87); humeral angles weakly marked; punctation shallow and weakly defined; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia slightly compressed.

Abdomen broader than elytra; punctation moderately fine and dense, somewhat sparser on posterior than on anterior tergites; posterior margin of tergite VII without palisade fringe; posterior margin of tergite VIII weakly convex.

♂: protarsomeres I–IV strongly dilated; sternite VII extensively impressed and with sparse long black setae in postero-median portion, posterior margin weakly concave (Fig. 88); sternite VIII moderately transverse, with shallow median impression, this impression with weakly modified black setae, posterior excision small and almost V-shaped (Fig. 89); aedeagus 1.5 mm long, ventral process thin and blade-shaped, dorsal plate lamellate and moderately sclerotised, internal sac with a long membranous tube (Figs 90–91).

♀: unknown.

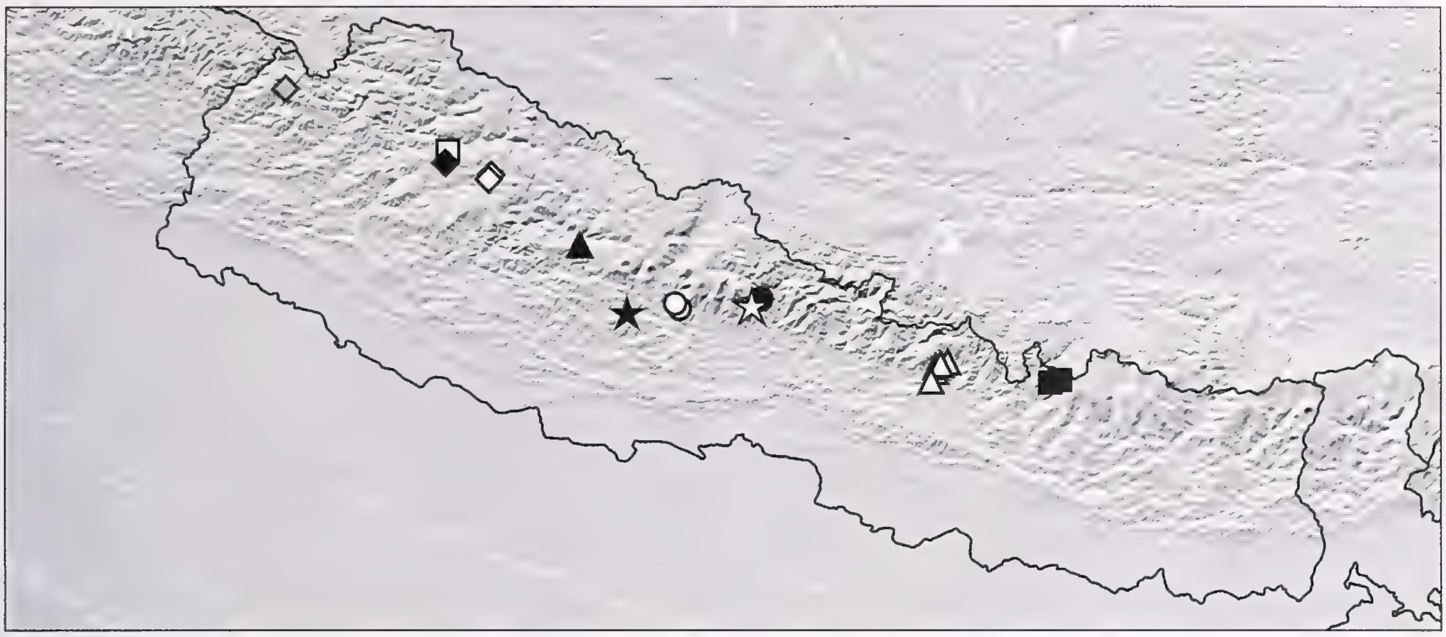


Fig. 96. Distributions of the species of the *L. muguicum* (open square), the *L. emodense* (stars, circles), the *L. jumlense* (diamonds), the *L. excisum* (filled square), and the *L. aculeatum* groups (triangles): *L. planissimum* (grey diamond); *L. muguicum* (open square); *L. jumlense* (black diamond); *L. inustum* (white diamonds); *L. aculeatum* (black triangle); *L. curvum* (black star); *L. emodense* (white circles); *L. spinosissimum* (white star); *L. annapurnense* (black circle); *L. spiculatum* (white triangles); *L. excisum* (black squares).

Comparative notes. Neither the external nor the male sexual characters suggest a closer relationship to any of the other species recorded from Nepal. In general external appearance, *L. muguicum* is somewhat similar to the species of the *L. nepalense* group, but at once distinguished from them by absence of microsculpture on the pronotum and by the completely different male sexual characters.

Etymology. The specific epithet (adjective) is derived from the name of the district where the type locality is situated.

Distribution and natural history. The species is known only from one locality in Mugu district, northwestern Nepal (Fig. 96). The holotype was collected at an altitude of 3200 m.

The *Lathrobium emodense* species group

Lathrobium emodense Coiffait, 1975 (Figs 92–96)

Lathrobium emodense Coiffait, 1975: 183 f.
Lathrobium goropanensis [sic] Coiffait, 1983: 172; **syn. n.**

Type material examined. *L. emodense*: Holotype ♀: "Umg. Goropani, W. Pokhara / Pa 143 [overleaf] / Zentral-Nepal, Sept.-Okt. 1971, lg. H. Franz / Holotype / Lathrobium emodense H. Coiffait 1975 / Lathrobium emodense Coiffait, det. V. Assing 2011" (NHMW).

L. goropanense: Holotype ♀: "Umg. Goropani, W. Pokhara / Pa 111 [overleaf] / Holotype / Lathrobium goropanensis H. Coiffait 1983 / Lathrobium emodense Coiffait, det. V. Assing 2011" (MNHNP).

Comment. *Lathrobium emodense* was described from a single female from "Environs de Goropani à l'ouest de Pokhara" (Coiffait 1975) deposited in the Franz collection at the NHMW. In the original description of *L. goropanense*, which is based on a unique female holotype from "Népal, environs de Goropani" (Coiffait 1983) deposited in the Coiffait collection at the MNHNP, there is no reference whatsoever to *L. emodense*, although the type localities of both species are practically the same. Also, the locality labels of both specimens are identical, except for the overleaf sample number. A comparison revealed that the holotype of *L. emodense* is slightly smaller than that of *L. goropanense*, but otherwise they are indistinguishable. In consequence, there is little doubt that both names refer to the same species, so that *L. goropanense* is placed in synonymy with *L. emodense*.

Fortunately, a male from the vicinity of the the environs of Ghorepani has become available, so that an interpretation of this species is now possible.

Additional material examined. Nepal: 1♂, 1♀, Parbat district, Punhill at Ghoropani Pass, 3050–3100 m, 8.X.1983, leg. Smetana & Löbl (MHNG, cAss).

Redescription. Body length 5.5–6.7 mm; length of forebody 2.4–2.9 mm. Coloration: body more or less uniformly reddish.

Head approximately as long as broad or weakly transverse; punctation coarse and moderately dense; interstices without distinct microsculpture (some shallow traces may be visible on frons), at least as broad as diameter of punctures in median dorsal portion, narrower than diameter of punctures in lateral and posterior dorsal portions. Eyes not projecting from lateral contours of head, small, composed of approximately 20 ommatidia.

Pronotum 1.20–1.25 times as long as broad and as broad as head; punctation similar to that of head; interstices without microsculpture.

Elytra short, 0.55–0.60 times as long as pronotum; humeral angles weakly marked; punctation shallow; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia somewhat compressed.

Abdomen broader than elytra; punctation moderately fine and dense; posterior margin of tergite VII without palisade fringe; posterior margin of tergite VIII truncate in both sexes.

♂: protarsomeres I–IV strongly dilated; sternite VII extensively impressed and with moderately dense modified setae in postero-median portion, posterior margin broadly and weakly concave (Fig. 92); sternite VIII broadly impressed along the middle and with moderately numerous modified setae, posterior margin with small posterior excision, on either side of this excision acutely produced (Fig. 93); aedeagus 1.2 mm long, with straight and apically acute ventral process (lateral view), a long, straight (lateral view), and distinctly sclerotised dorsal plate, and with several strongly sclerotised internal structures of characteristic shape (Figs 94–95).

♀: protarsomeres I-IV dilated, but slightly less so than in male; sternite VIII oblong and convexly produced posteriorly; tergite IX undivided; tergite X distinctly longer than tergite IX in the middle.

Comparative notes. As can be inferred from the similar external morphology, the similar shapes and chaetotaxy of the male sternites VII and VIII, and particularly by the similarly derived morphology of the aedeagus (shape of ventral process, long and straight dorsal plate, numerous long sclerotised structures in internal sac), *L. emodense* is closely related to the three following species. It is distinguished from them by larger body size and especially by the shape of the male sternite VIII and by the morphology of the aedeagus.

Distribution and natural history. The species is currently known only from the environs of Ghorepani in the southwestern extension of the Annapurna range (Fig. 96). The additional specimens were collected at an altitude of 3050–3100 m. According to Franz´ diary, the holotype of *L. goropanense* was sifted from leaf litter in a montane forest on a southwestern slope on 19.IX.1971, and the holotype of *L. emodense* was collected near Goropani by sifting leaf litter on 27.IX.1971.

Lathrobium curvum sp. n. (Figs 96–101)

Type material. Holotype ♂: "Nepal Himalaya, Dhawalagiri, 2004, Baglung Lekh / 30 km west Baglung, N Tara Khola [28°22'N, 83°20'E], 27-2900 m, 20.05.04, leg. J. Schmidt / Holotypus ♂ *Lathrobium curvum* sp. n., det. V. Assing 2011" (cAss).

Description. Body length 6.3 mm; length of forebody 2.9 mm. Coloration: body brown with somewhat paler legs and abdominal apex (apparently darkened post-mortem, coloration of body in freshly collected material probably reddish).

Head (Fig. 97) approximately as long as broad; punctation coarse and rather dense; interstices without distinct microsculpture, approximately as broad as diameter of punctures in median dorsal portion. Eyes not projecting from lateral contours of head, small, composed of approximately 20 ommatidia.

Pronotum (Fig. 97) 1.25 times as long as broad and as broad as head; punctation similar to that of head, but slightly less coarse; interstices without microsculpture.

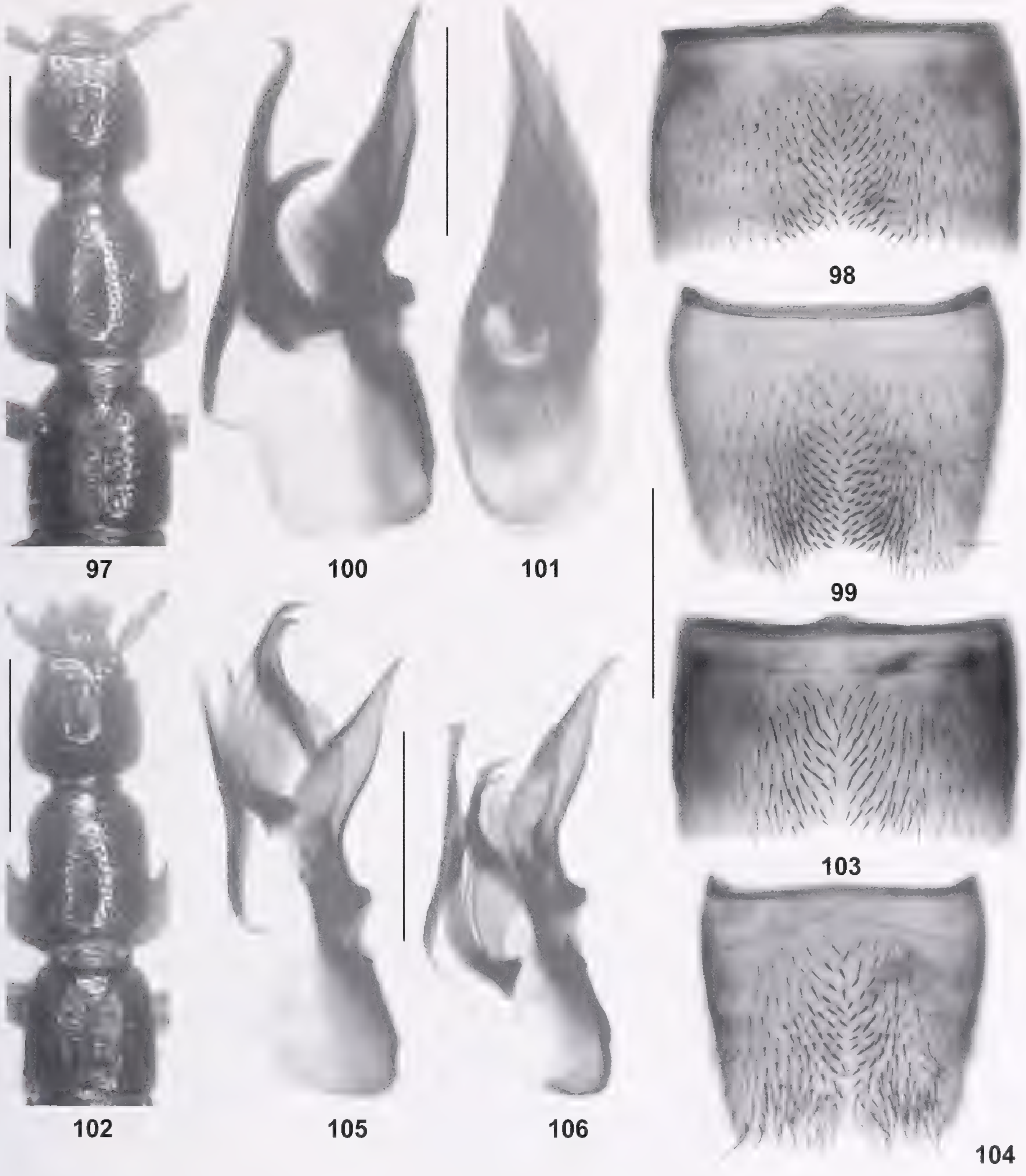
Elytra short, 0.6 times as long as pronotum (Fig. 97); humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia slightly compressed.

Abdomen broader than elytra; punctation fine and moderately dense; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII truncate; sternite VII impressed and with numerous modified setae in postero-median portion, posterior margin concave in the middle (Fig. 98); sternite VIII broadly impressed along the middle and with numerous modified setae, posterior margin with broadly concave posterior excision in the middle (Fig. 99); aedeagus large, 1.3 mm long, with apically acute ventral process, strongly sclerotised and apically curved dorsal plate, and with large, strongly curved, and strongly sclerotised internal structures (Figs 100–101).

♀: unknown.

Comparative notes. Based on the similarly derived shape and chaetotaxy of the male sternite VII and VIII, as well as on the similar general morphology of the aedeagus (strongly sclerotised dorsal plate; distinctly sclerotised internal structures; shape of ventral process), *L. curvum* and the two following species form a well-defined species group confined to the Annapurna and Dhaulagiri ranges



Figs 97–106. *Lathrobium curvum* (**97–101**) and *L. spinosissimum* (**102–106**). **97, 102:** forebody; **98, 103:** male sternite VII; **99, 104:** male sternite VIII; **100, 105–106:** aedeagus in lateral view; **101:** aedeagus in ventral view. Scale bars: 97, 102: 1.0 mm; 98–101, 103–106: 0.5 mm.

in central Nepal. Among the species of this group, *L. curvum* and *L. spinosissimum* are evidently most closely related, as is suggested by the similarly derived morphology of the aedeagus (shape of internal structures and of the dorsal plate). From *L. spinosissimum* and *L. annapurnense*, both from the Annapurna, *L. curvum* is distinguished particularly by the male primary and secondary sexual characters (especially the shape and chaetotaxy of the male sternite VIII and the morphology of the aedeagus), from *L. annapurnense* additionally by larger size.

Etymology. The name (Latin, adjective) alludes to the sickle-shaped internal structures of the aedeagus.

Distribution and natural history. The type locality is situated in the Dhaulagiri range, central Nepal (Fig. 96), at an altitude of 2700–2900 m.

***Lathrobium spinosissimum* sp. n.** (Figs 96, 102–106, 125)

Type material. Holotype ♂: "S Lamjun Himal, W-slope Taunja Danda [28°25'N, 84°12'E], 3700 m, 9.8.95 / Nepal Annapurna-Mts., leg. Frabrizi, Jäger, Schmidt / Holotypus ♂ *Lathrobium spinosissimum* sp. n., det. V. Assing 2011" (SDEI). Paratypes: 1♂, 1♀: same data as holotype (SDEI, cAss).

Description. Body length 5.8–6.1 mm; length of forebody 2.7 mm. Coloration: body brown to dark-brown; legs and antennae reddish-brown.

Head (Fig. 102) approximately as long as broad or weakly oblong; punctation coarse and rather dense; interstices without distinct microsculpture (some shallow traces may be visible on frons), at least as broad as diameter of punctures in median dorsal portion, narrower than diameter of punctures in lateral and posterior dorsal portions. Eyes not projecting from lateral contours of head, small, composed of approximately 20 ommatidia.

Pronotum (Fig. 102) approximately 1.25 times as long as broad and as broad as head; punctation similar to that of head, but slightly less coarse; interstices without microsculpture.

Elytra short, approximately 0.55 times as long as pronotum (Fig. 102); humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia somewhat compressed.

Abdomen broader than elytra; punctation moderately fine and dense; posterior margin of tergite VII without palisade fringe; posterior margin of tergite VIII weakly convex in both sexes.

♂: protarsomeres I–IV strongly dilated; sternite VII shallowly impressed and with moderately dense modified setae in postero-median portion, posterior margin broadly concave (Fig. 103); sternite VIII broadly impressed along the middle and with moderately numerous modified setae, posterior margin with small posterior excision in the middle (Fig. 104); aedeagus 1.0 mm long, with straight and apically acute ventral process (lateral view), a long, distinctly sclerotised, and apically hooked dorsal plate, and with several strongly sclerotised internal structures of characteristic shape (Figs 105–106).

♀: protarsomeres I–IV dilated, but slightly less so than in male; sternite VIII oblong and convexly produced posteriorly (Fig. 125); tergite IX undivided; tergite X slightly longer than tergite IX in the middle.

Comparative notes. *Lathrobium spinosissimum* is characterised particularly by the morphology of the aedeagus (shape of ventral process and dorsal plate, internal structures), as well as by the shape and chaetotaxy of the male sternites VII and VIII. The similar primary and secondary sexual characters suggest that the species is closely related to the smaller *L. annapurnense*.

Etymology. The specific epithet (adjective, superlative of spinosus) alludes to the conspicuous assortment of sclerotised internal structures.

Distribution and natural history. The type locality is situated in the southern Lamjun (or Lamjung) Himal in central Nepal (Fig. 96). The specimens were collected at an altitude of 3700 m.

***Lathrobium annapurnense* sp. n.** (Figs 96, 107–111)

Type material. Holotype ♂: "Nepal-Himalaya, Annapurna Mts., S Lamjun Himal, Namun Pass, S Hang, 4900 m, 28.5.1993, leg. J. Schmidt / Holotypus ♂ *Lathrobium annapurnense* sp. n., det. V. Assing 2011" (cAss). Paratypes: 1♂, 1♀: same data as holotype (cKle).

Description. Body length 5.0–5.5 mm; length of forebody 2.4–2.5 mm. Coloration: body dark-brown; legs reddish-brown; antennae reddish.

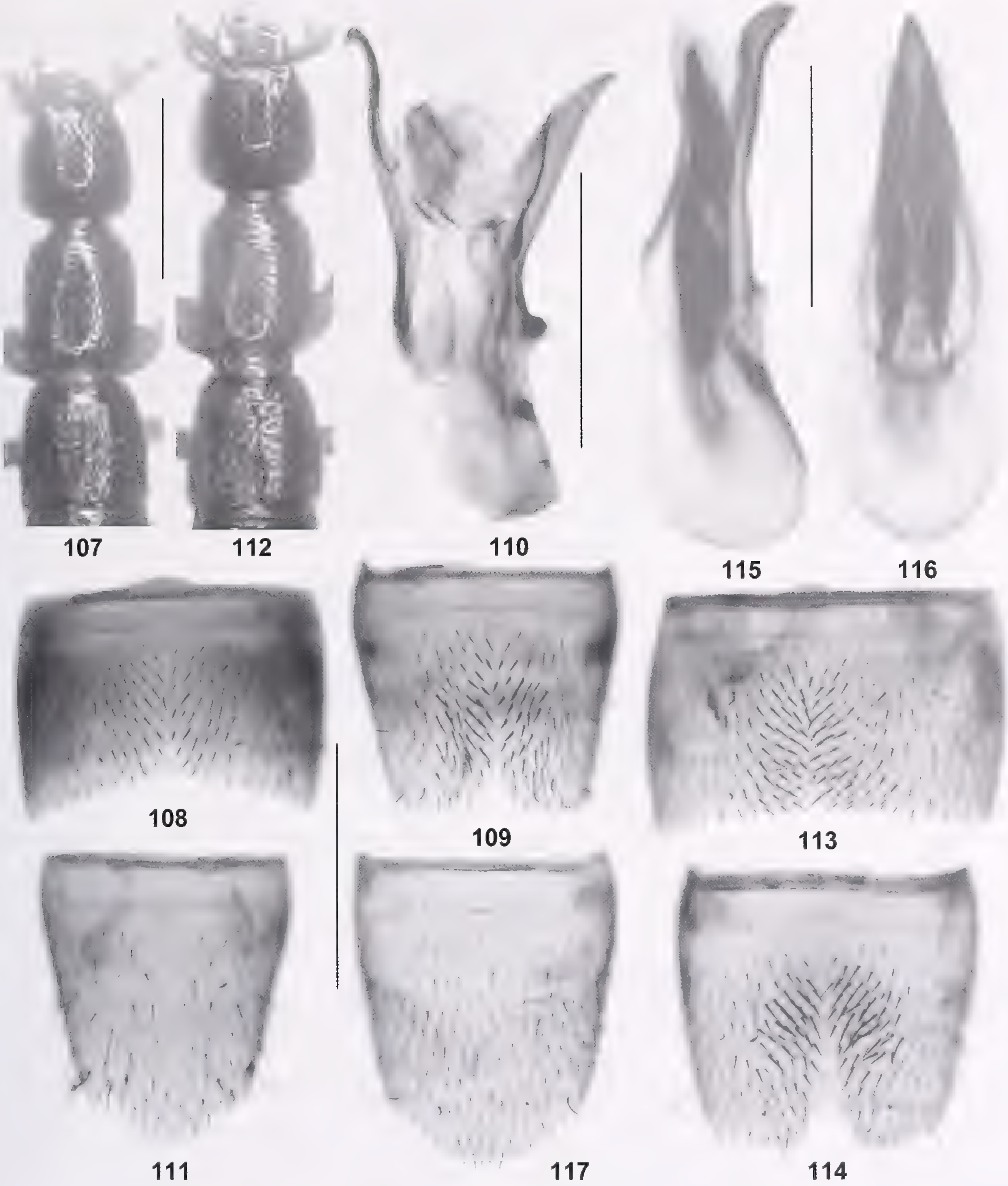
Head (Fig. 107) approximately as long as broad; punctation coarse and rather dense; interstices without microsculpture, approximately as broad as diameter of punctures in median dorsal portion, narrower than diameter of punctures in lateral and posterior dorsal portions. Eyes not projecting from lateral contours of head, small, composed of approximately 25 ommatidia.

Pronotum (Fig. 107) 1.20–1.25 times as long as broad and as broad as head; punctation similar to that of head, but slightly less coarse; interstices without microsculpture.

Elytra short, 0.6 times as long as pronotum (Fig. 107); humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia weakly compressed.

Abdomen broader than elytra; punctation fine and dense; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII truncate; sternite VII shallowly impressed and with relatively sparse, weakly modified setae in postero-median portion, posterior margin broadly concave (Fig. 108); sternite VIII broadly impressed along the middle and with moderately numerous modified setae, posterior margin with concave posterior excision in the middle (Fig. 109); aedeagus 0.83 mm long, with rel-



Figs 107–117. *Lathrobium annapurnense* (**107–111**) and *L. excisum* (**112–117**). **107, 112:** forebody; **108, 113:** male sternite VII; **109, 114:** male sternite VIII; **110, 115–116:** aedeagus in lateral view; **111, 117:** female sternite VIII; **116:** aedeagus in ventral view. Scale bars: 107, 112: 1.0 mm; 108–111, 113–117: 0.5 mm.

atively broad ventral process (lateral view), a long, strongly sclerotised, and apically hooked dorsal plate, and with membranous internal structures (Fig. 110).

♀: protarsomeres I–IV dilated, but slightly less so than in male; posterior margin of tergite VIII weakly convex; sternite VIII weakly elongated, convexly produced posteriorly (Fig. 111); tergite IX undivided; tergite X approximately as long as tergite IX in the middle.

Comparative notes. Among the species of the *L. emodense* group, *L. annapurnense* is characterised particularly by the morphology of the aedeagus (shape of ventral process and dorsal plate, internal sac without spine-like sclerotised structures), the shape and chaetotaxy of the male sternites VII and VIII, as well as by its small size. From most Himalayan *Lathrobium* species of similarly small size, it is additionally distinguished by the darker coloration.

Etymology. The specific epithet (adjective) is derived from the name of the mountain range where the type locality is situated.

Distribution and natural history. The species is known from only one locality in the Annapurna range (Fig. 96), where the specimens were collected at an altitude of 4900 m.

The *Lathrobium excisum* group

Lathrobium excisum sp. n. (Figs 96, 112–117, 295)

Type material. Holotype ♂: "Ost-Nepal, Rolwaling Himal / nordöstl. unterh. d. Daldung La Pass, 3800 m, 27.05.2000 leg. A. Kleeberg / Holotypus ♂ *Lathrobium excisum* sp. n., det. V. Assing 2011" (cAss). Paratypes: 2♀♀: same data as holotype (cKle); 3♀♀: "Ost-Nepal, Rolwaling Himal / Rolwaling Tal, Nyimare, 3300 m, 19.05.2000 leg. A. Kleeberg" (cKle, cAss).

Description. Body length 5.5–6.7 mm; length of forebody 2.5–3.0 mm. Coloration: body reddish, with slightly darker abdominal segments III–VI and with slightly paler legs.

Head (Fig. 112) weakly oblong, 1.05–1.10 times as long as broad; punctation relatively coarse and moderately dense; interstices with very indistinct traces of microreticulation, glossy. Eyes composed of approximately 20 ommatidia, with pigmentation.

Pronotum (Fig. 112) approximately 1.3 times as long as broad and slightly narrower than head; punctation approximately as dense as that of head, but less coarse; interstices without microsculpture.

Elytra short, approximately 0.6 times as long as pronotum (Fig. 112). Hind wings completely reduced. Legs not compressed.

Abdomen broader than elytra; punctation rather fine and dense; interstices with distinct microsculpture; posterior margin of tergite VIII without palisade fringe.

♂: protarsomeres I–IV more strongly dilated than in female; posterior margin of tergite VIII truncate; sternite VII extensively, but not very deeply impressed in posterior median portion, this impression with numerous modified setae, posterior margin weakly concave (Fig. 113); sternite VIII broadly impressed along the middle, this impression with pair of clusters of numerous modified setae, posterior margin with distinct median excision (Fig. 114); aedeagus 1.15 mm long, with apically weakly curved ventral process (lateral view) and with lamellate dorsal plate (Figs 115–116).

♀: posterior margin of tergite VIII unmodified; sternite VIII (Fig. 117) convexly produced posteriorly; tergite IX not divided in the middle; tergite X distinctly longer than tergite IX in the middle.

Comparative notes. *Lathrobium excisum* is distinguished from other microphthalmous and depigmented representatives of the genus particularly by the shapes and chaetotaxy of the male sternites VII and VIII, as well as by the morphology of the aedeagus. Based on the similar shape and chaetotaxy of the male sternite VIII, this species is probably most closely affiliated with the species of the *L. emodense* group, from which it is separated by the morphology of the aedeagus (absence of sclerotised spines in internal sac, lamellate dorsal plate, shape of ventral process).

Etymology. The specific epithet (Latin, adjective) refers to the posterior excision of the male sternite VIII, one of the characters distinguishing *L. excisum* from the geographically close and externally similar *L. janetscheki*.

Distribution and natural history. *Lathrobium excisum* was collected in two localities in the Rolwaling Himal, eastern Nepal (Fig. 96), at altitudes of 3300 and 3800 m (Fig. 295). In one of the localities, the species was found together with *L. kleebergi*.

The *Lathrobium gladiator* group

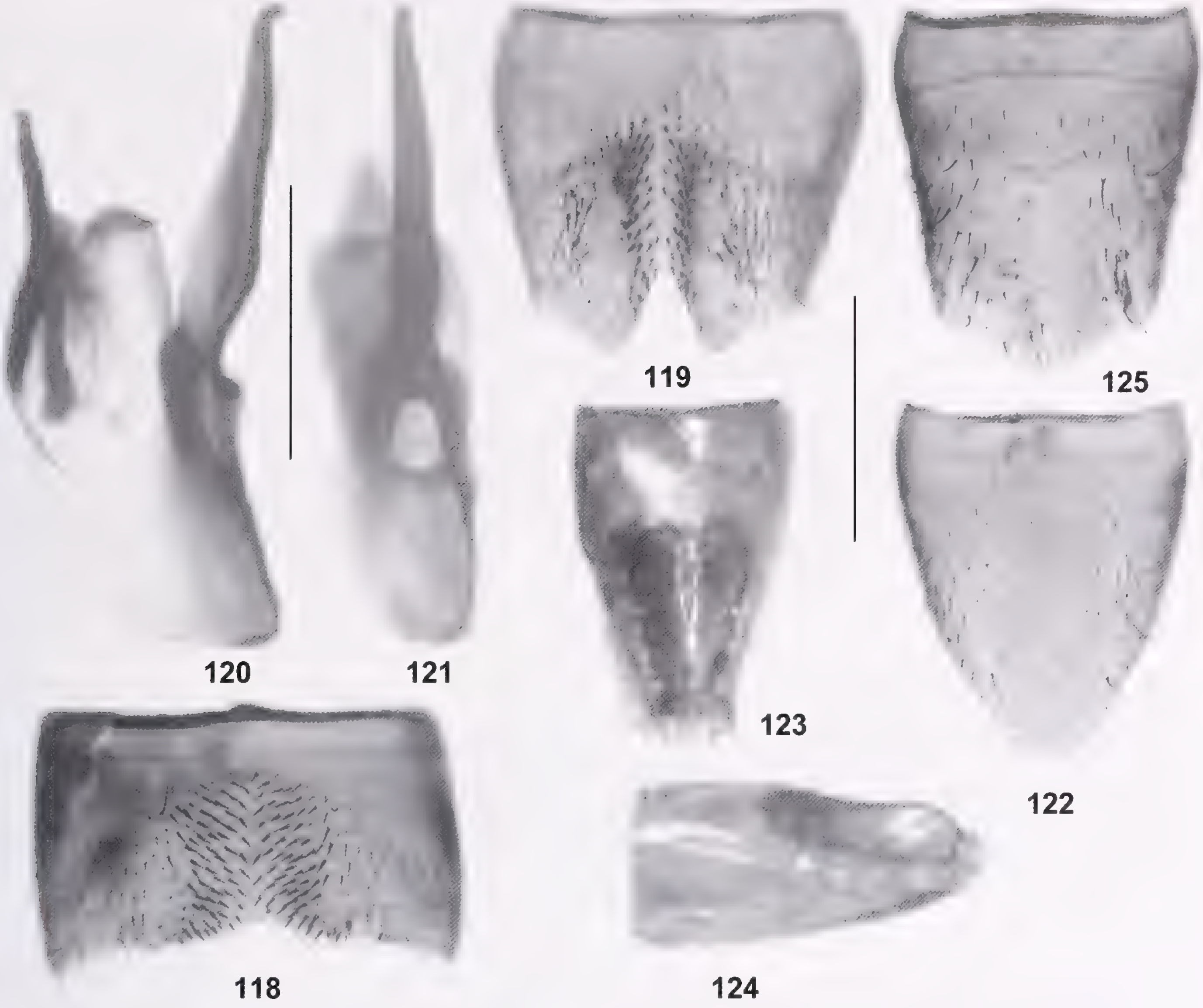
Lathrobium gladiator Coiffait, 1982 (Figs 118–124)

Lathrobium gladiator Coiffait, 1982b: 286 f.

Type material examined. Holotype ♂: "Inde Samum, Bhadarwak, 3200–3700 T.D / Holotype / Lathrobium gladiator H. Coiffait 1982 / Lathrobium gladiator Coiffait, det. V. Assing 2011" (MNHNP). Paratype ♀: same data as holotype (MNHNP).

Comment. The original description is based on a male holotype and a female paratype from "Inde, Pir Panjal, Ghadarwak, Samum, 3200 m" (Coiffait 1982b), both deposited in the Coiffait collection at the MNHNP.

Redescription. Body length 5.0–5.2 mm; length of forebody 2.5 mm. Coloration: body uniformly reddish-yellow.



Figs 118–125. *Lathrobium gladiator* (**118–124**) and *L. spinosissimum* (**125**). **118:** male sternite VII; **119:** male sternite VIII; **120:** aedeagus in lateral view; **121:** aedeagus in ventral view; **122, 125:** female sternite VIII; **123:** female tergites IX–X in dorsal view. **124:** female tergites IX–X in lateral view. Scale bars: 0.5 mm.

Head approximately as long as broad or weakly oblong; punctation coarse and relatively sparse; interstices with distinct microreticulation, on average broader than diameter of punctures. Eyes not projecting from lateral contours of head, small, composed of approximately ten ommatidia.

Pronotum 1.25–1.30 times as long as broad and slightly narrower than head, weakly tapering posteriad; punctation finer than, and of similar density as that of head; interstices without microsculpture.

Elytra short, 0.55–0.60 times as long as pronotum; humeral angles weakly marked; punctation shallow; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia somewhat compressed.

Abdomen broader than elytra; punctation moderately fine and dense; posterior margin of tergite VII without palisade fringe; posterior margin of tergite VIII weakly convex in both sexes.

♂: protarsomeres I–IV strongly dilated; sternite VII with extensive and distinct impression, this impression with numerous modified setae, posterior margin broadly concave, in the middle with additional concavity (Fig. 118); sternite VIII narrowly and distinctly impressed along the middle, this impression with numerous modified, short and stout setae, posterior excision V-shaped and moderately deep, on either side of this incision with acute projections (Fig. 119); aedeagus 1.2 mm long, ventral process long and apically hooked, dorsal plate strongly sclerotised, internal sac with sclerotised internal structure (Figs 120–121).

♀: protarsomeres I–IV dilated, but distinctly less so than in male; sternite VIII oblong, longer than tergite VIII, and rather narrowly produced posteriorly (Fig. 122); tergite IX undivided; tergite X distinctly longer than tergite IX in the middle, strongly bulging, almost keeled in posterior half in cross-section (Figs 123–124).

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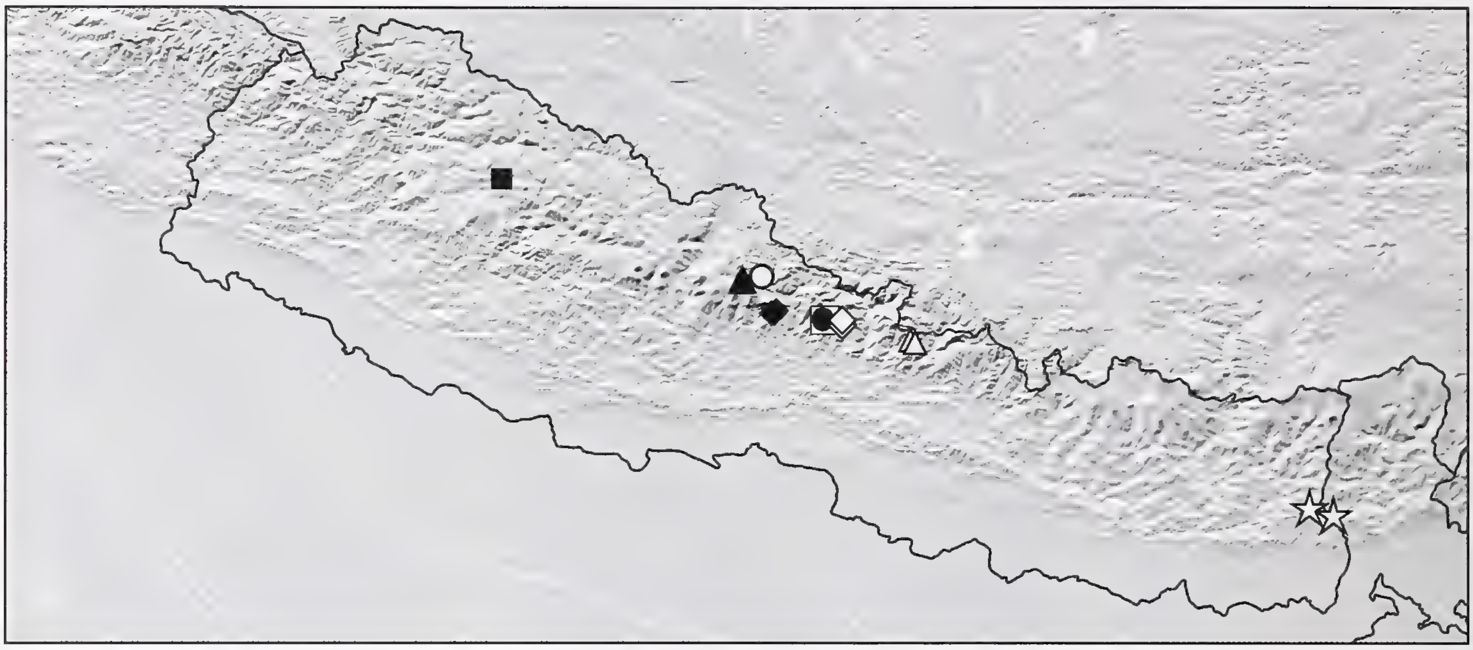


Fig. 126. Distributions of the species of the *L. discissum* (stars) and the *L. deuvei* groups (other symbols): *L. barthei* (filled square); *L. palatum* (filled triangle); *L. aciforme* (open circle); *L. lamjunense* (filled diamonds); *L. apalatum* (filled circles); *L. deuvei* (open square); *L. rupinaicum* (open diamonds); *L. ganeshense* (open triangles); *L. discissum* (open stars).

Comparative notes. Based on the male primary and secondary sexual characters, this species is most closely allied to the species of the *L. emodense* group. It is distinguished from them particularly by the distinctive shape and chaetotaxy of the male sternite VII (shape somewhat similar to that of *L. emodense*), the morphology of the aedeagus, as well as by the conspicuous shape of the female tergite X.

Distribution and natural history. The species is currently known only from the environs of the Pir Panjal pass [ca. 33°38'N, 74°31'E] in Kashmir. According to the labels attached to the type specimens they were collected between 3200 and 3700 m.

The *Lathrobium deuvei* group

Lathrobium deuvei Coiffait, 1981 (Figs 126–130)

Lathrobium deuvei Coiffait, 1981: 329.

Type material examined. Holotype ♂: "Nepal VIII.80, Dudh Pokari / 4300 Himal Chuli D.L / Holotype / Lathrobium deuvei H. Coiffait 1981 / Lathrobium deuvei Coiffait, det. V. Assing 2011" (MNHNP). Paratypes: 1♂, 1♀: same data as holotype (but labelled "Paratype" and "Allotype", respectively) (MNHNP).

Comment. The original description is based on the male holotype and nine paratypes from "Duth [sic] Pokhari, Himal Chuli 4300 m" deposited in the Coiffait collection.

Redescription. Body length 7.5–8.5 mm; length of forebody 3.7–3.9 mm. Coloration: body reddish-brown to dark-brown.

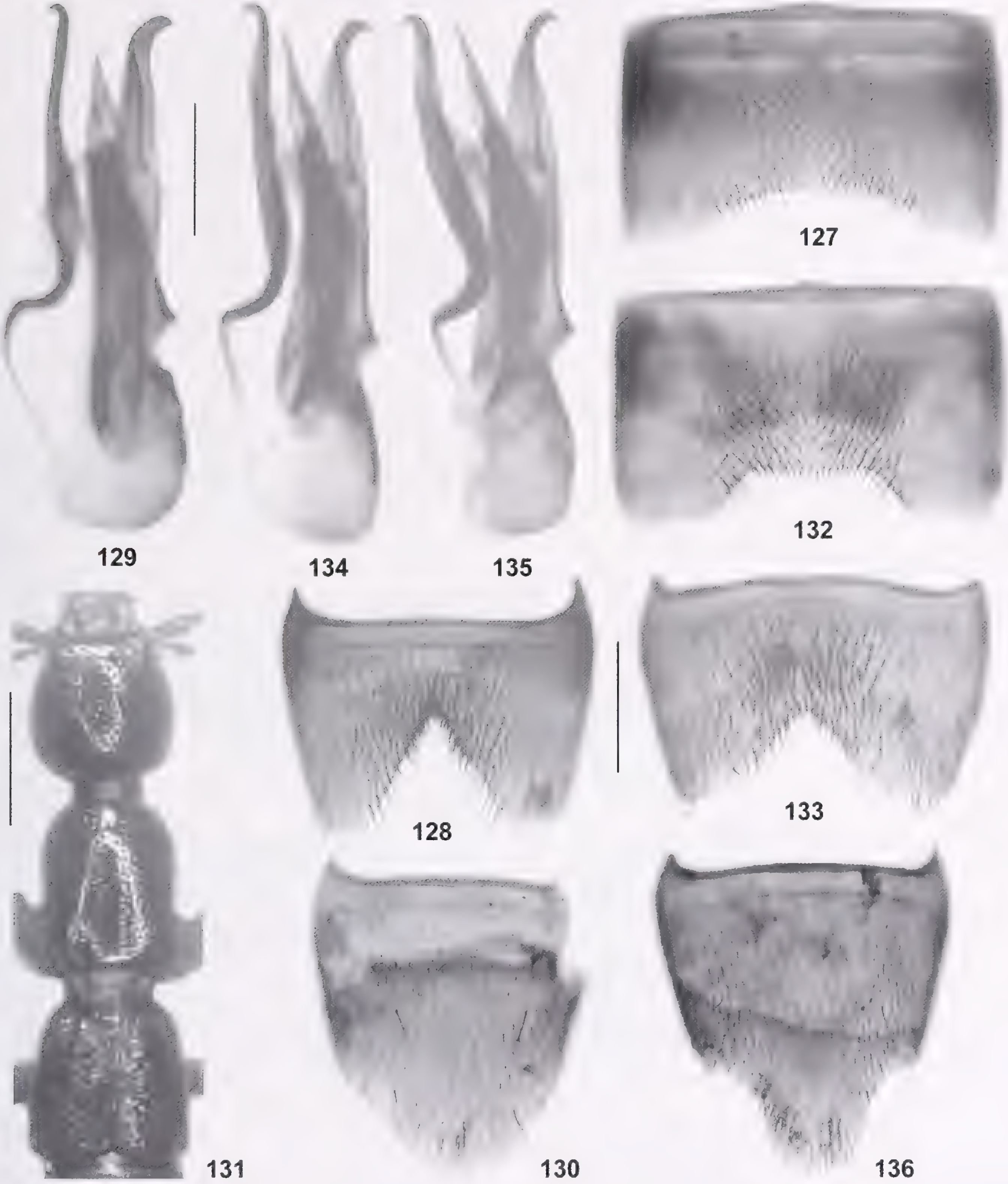
Head approximately as broad as long; punctation coarse and dense; interstices in lateral and posterior dorsal portions on average narrower than diameter of punctures; interstices without microreticulation, glossy. Eyes very small, composed of approximately ten ommatidia.

Pronotum relatively slender, 1.25–1.30 times as long as broad and approximately 0.95 times as broad as head, noticeably tapering posteriad; punctation similar to that of head, but slightly finer; interstices on average as broad as, or slightly wider than diameter of punctures, without microsculpture and glossy.

Elytra short, approximately 0.6 times as long as pronotum; humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia unmodified.

Abdomen broader than elytra, widest at segment VI; punctation dense and fine; interstices with shallow finely transverse microsculpture; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII weakly convex; sternite VII strongly transverse, with shallow and rather extensive impression posteriorly, this impression with numerous black setae, posterior margin with broadly and rather deeply concave posterior excavation, middle of this excavation not distinctly bisinuate (Fig. 127); sternite VIII with numerous short black setae, particularly at margin of posterior excision, posterior excision large, acute, and very deep, reaching clearly beyond middle of sternite (Fig. 128);



Figs 127–136. *Lathrobium deuvei* (**127–130**) and *L. lamjunense* (**131–136**). **127, 132:** male sternite VII; **128, 133:** male sternite VIII; **129, 134–135:** aedeagus in lateral view; **130, 136:** female sternite VIII; **131:** forebody. Scale bars: 131: 1.0 mm; 127–130, 132–136: 0.5 mm.

aedeagus large, approximately 1.9 mm long; ventral process long, slender, and apically hooked; dorsal plate with lamellate basal portion and with long, slender, strongly sclerotised, and apically hooked apical portion; internal sac with very long, slender, and apically acute sclerotised structures (Fig. 129).

♀: protarsomeres I–IV dilated, but somewhat less so than in male; tergite VIII of similar shape as in male; sternite VIII posteriorly convex, not conspicuously produced (Fig. 130); tergite IX not divided in the middle; tergite X much shorter than tergite IX in the middle.

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Comparative notes. *Lathrobium deuvei* and the six following species form a group of highly similar and undoubtedly closely related species, all of which are distributed in central and western Nepal. The representatives of this group, hereafter referred to as the *L. deuvei* group, are practically indistinguishable based on external characters and characterised by moderate to large body size, minute eyes with very few ommatidia, a slender and posteriorly tapering pronotum, a strongly transverse and posteriorly distinctly excavated male sternite VII, a transverse sternite VIII with a deep (exception: *L. ganeshense*) and broadly V-shaped posterior excision and often conspicuous fringes or cluster of dense dark setae, a large and slender aedeagus with an apically acute, either hooked or straight ventral process, with a dorsal plate composed of a lamellate basal portion and a slender, distinctly sclerotised and apically hooked apical portion, and with long, distinctly sclerotised, and apically acute internal structures. In addition, some species have a posteriorly distinctly produced female sternite VIII.

Lathrobium deuvei is distinguished from other species of the *L. deuvei* group particularly by the shape of the ventral process of the aedeagus, the shape of the male sternite VII (strongly transverse, posterior excavation regularly concave and without bisinuate anterior margin), the shape of the male sternite VIII (posterior excision conspicuously deep, its depth much more than half the length of sternite), and by the weakly modified female sternite VIII.

Distribution and natural history. *Lathrobium deuvei* is known only from the type locality, the Himal Chuli in the Manaslu range (Fig. 126). The type specimens were collected at an altitude of 4300 m.

Lathrobium lamjunense sp. n. (Figs 126, 131–136)

Type material. Holotype ♂: “Lamjun Himal, Dudh Pokhari [28°26’N, 84°16’E], 44–4600 m [sic], 15.8.95 / Nepal Annapurna-Mts., leg. Fabrizi, Jäger, Schmidt / Holotypus ♂ *Lathrobium lamjunense* sp. n., det. V. Assing 2011” (SDEI). Paratypes: 15 exs.: same data as holotype (SDEI, cAss); 3 exs.: “S Lamjun Himal, Wasserscheide Khudi-Miyardi-Chhar Khola [28°25’N, 84°15’E], 15.8.95, 4300 m / Nepal Annapurna-Mts., leg. Fabrizi, Jäger, Schmidt” (SDEI, cAss); 2 exs.: “S Lamjun Himal, E Taunja Danda, Quellgeb. Chhar Khola [28°25’N, 84°14’E], 4300 m, 14.8.95 / Nepal Annapurna-Mts., leg. Fabrizi, Jäger, Schmidt” (SDEI).

Description. Rather large species; body length 7.5–9.0 mm; length of forebody 3.5–4.0 mm. Coloration: body reddish-brown to dark-brown. Forebody as in Fig. 131. External characters as in *L. deuvei*.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII indistinctly angled in the middle; sternite VII weakly impressed and with numerous blackish setae posteriorly, posterior margin strongly excavated in the middle, anterior margin of this excavation weakly bisinuate (Fig. 132); sternite VIII weakly impressed and with numerous short black setae, posterior excision pronounced, deeply and broadly V-shaped (Fig. 133); aedeagus large, 1.8–2.0 mm long; ventral process long, slender, and apically hooked; dorsal plate with lamellate basal portion and with long, slender, strongly sclerotised, and apically hooked apical portion; internal sac with very long, slender, and apically acute sclerotised structures (Figs 134–135).

♀: protarsomeres I–IV dilated, but somewhat less so than in male; tergite VIII of similar shape as in male; sternite VIII posteriorly conspicuously produced in the middle (Fig. 136); tergite IX not divided in the middle; tergite X shorter than tergite IX in the middle.

Comparative notes. *Lathrobium lamjunense* is reliably distinguished from other species of the *L. deuvei* group only by the male primary and secondary sexual characters.

Etymology. The specific epithet (adjective) is derived from the name of the mountain range where the species was discovered.

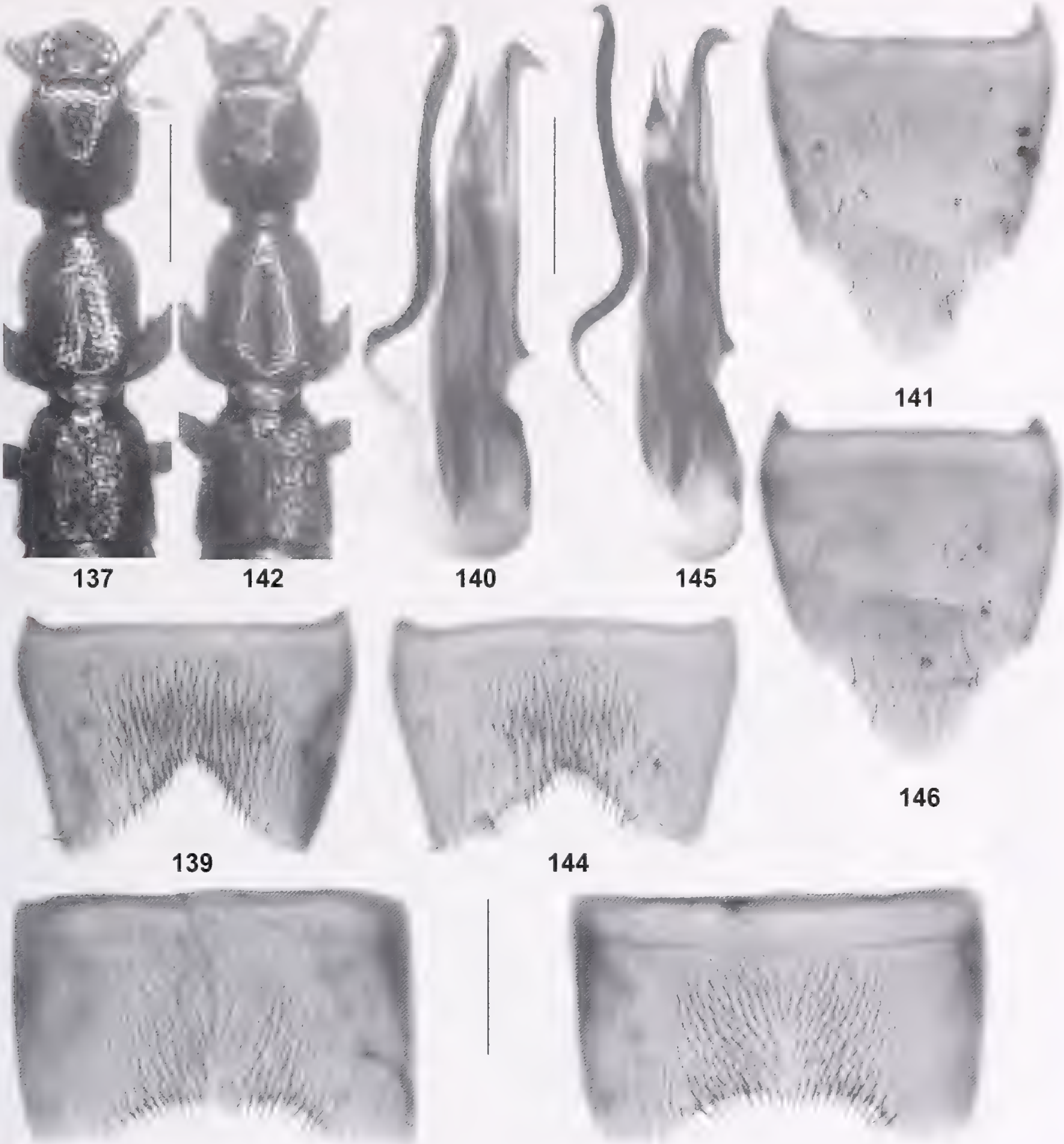
Distribution and natural history. *Lathrobium lamjunense* may be endemic to the Lamjun Himal in central Nepal (Fig. 126). The species has been collected at altitudes of 4300–4600 m.

Lathrobium palatum sp. n. (Figs 126, 137–141)

Type material. Holotype ♂: “Nepal c.: Annapurna Mts.: Kang La-Pass, N- / slope, E Manang, 5000 m, 5.VI.1994, leg. J. Schmidt / Holotypus ♂ *Lathrobium palatum* sp. n., det. V. Assing 2011” (SDEI). Paratypes: 2♀♀: same data as holotype (SDEI, cAss).

Description. Body length 6.5–8.0 mm; length of forebody 3.4–3.8 mm. Coloration: whole body uniformly reddish. Head weakly oblong (Fig. 137). Other external characters as in *L. deuvei*.

♂: posterior margin of tergite VIII weakly convex in the middle; sternite VII similar to that of *L. deuvei*, but posterior excavation shallower and with more distinctly bisinuate anterior margin (Fig. 138); sternite VIII similar to that of *L. deuvei* (Fig. 139); aedeagus similar to that of *L. deuvei*, but smaller, 1.7 mm long, ventral process apically angled, not curved (Fig. 140).



Figs 137–146. *Lathrobium palatum* (**137–141**) and *L. aciforme* (**142–146**). **137, 142:** forebody; **138, 143:** male sternite VII; **139, 144:** male sternite VIII; **140, 145:** aedeagus in lateral view; **141, 146:** female sternite VIII. Scale bars: 137, 142: 1.0 mm; 138–141, 143–146: 0.5 mm.

♀: secondary sexual characters similar to those of *L. deuvei*, but sternite VIII strongly produced posteriorly (Fig. 141)

Comparative notes. *Lathrobium palatum* is distinguished from the similar *L. deuvei* particularly by the noticeably oblong head, smaller average size, paler coloration, the shape of the posterior excavation of the male sternite VII, by the morphology of the smaller aedeagus (shape of the apex of the ventral process and of the internal structures), and by the shape of the female sternite VIII.

Etymology. The name is an adjective is derived from the Latin noun pala (shovel, spade) and alludes to the shape of the female sternite VIII.

Distribution and natural history. The type locality is situated in the northern Annapurna Himal to the east of Manang, central Nepal (Fig. 126). The specimens were collected at an altitude of 5000 m.

Lathrobium aciforme sp. n. (Figs 126, 142–146)

Type material. Holotype ♂: "Nepal: N-Annapurna Mts.: Pisang Peak, / N-slope, 4500–4700 m, 6.VI.1994, leg. J. Schmidt / Holotypus ♂ *Lathrobium aciforme* sp. n., det. V. Assing 2011" (SDEI). Paratypes: 5♂♂, 19♀♀: same data as holotype (SDEI, cAss).

Description. Body length 7.0–8.5 mm; length of forebody 3.4–3.9 mm. Coloration: whole body reddish to reddish-brown. Head often noticeably oblong and posteriorly tapering (Fig. 142). Other external characters as in *L. deuvei*.

♂: posterior margin of tergite VIII weakly convex; sternite VII similar to that of *L. deuvei*, but posterior excavation shallower and with more distinctly bisinuate anterior margin (Fig. 143); sternite VIII similar to that of *L. deuvei*, but posterior excision shallower and somewhat asymmetric (Fig. 144); aedeagus similar to that of *L. deuvei*, but smaller, 1.7–1.8 mm long, apex of ventral process of slightly different shape, and internal structures subapically abruptly narrowed and apically needle-shaped (Fig. 145).

♀: sternite VIII similar to that of *L. palatum*, but posterior projection shorter and basally broader; other secondary sexual characters as in *L. deuvei*.

Comparative notes. *Lathrobium aciforme* is reliably distinguished from other representatives of the *L. deuvei* group by the shape of the aedeagus (especially the shape of the apex of the ventral process and the shape of the internal structures), the shape and chaetotaxy of the male sternite VII, the shallower and somewhat asymmetric posterior excision of the male sternite VIII, as well as by the shape of the female sternite VIII.

Etymology. The specific epithet (Latin, adjective) alludes to the needle-shaped apex of the internal structures of the aedeagus, one of the characters separating this species from its closest relatives.

Distribution and natural history. The type locality, the Pisang Himal, is situated in the northern Annapurna Himal (Fig. 126), not far from the type locality of *L. palatum*. The specimens were collected at an altitude of 4500–4700 m. One of the females is teneral.

Lathrobium apalatum sp. n. (Figs 126, 147–151)

Type material. Holotype ♂: "Meme Pokhari Lekh, Meme Pokhari [28°22'N, 84°35'E], 4300 m, 8.9. / Nepal Himalaya, Manaslu-Mts., lg. Schmidt 1995 / Holotypus ♂ *Lathrobium apalatum* sp. n., det. V. Assing 2011" (SDEI). Paratypes: 3♂♂, 1♀: same data as holotype (SDEI, cAss); 7♂♂, 5♀♀: "Himal Chuli, Meme Pokhari Lekh: Dudh Pokhari [28°23'N, 84°35'E], 4400 m, 9.9. / Nepal Himalaya, Manaslu-Mts., lg. Schmidt 1995" (SDEI, cAss).

Description. Body length 7.0–8.5 mm; length of forebody 3.4–3.9 mm. Forebody as in Fig. 147. Coloration: whole body reddish to reddish-brown, with the abdominal segments III-VI or III-VII often darker. Other external characters as in *L. deuvei*.

♂: posterior margin of tergite VIII weakly convex or truncate; sternite VII similar to that of *L. deuvei*, but posterior excavation shallower and with more distinctly bisinuate anterior margin (Fig. 148); sternite VIII similar to that of *L. deuvei*, but posteriorly with denser blackish pubescence and posterior excision even deeper and broader (Fig. 149); aedeagus similar to that of *L. deuvei*, but smaller, 1.7–1.8 mm long, ventral process apically stouter, apical portion of dorsal plate shorter, and internal structures of slightly different shape (Fig. 150).

♀: sternite VIII not conspicuously produced posteriorly, posterior margin obtusely angled (Fig. 151); other secondary sexual characters as in *L. deuvei*.

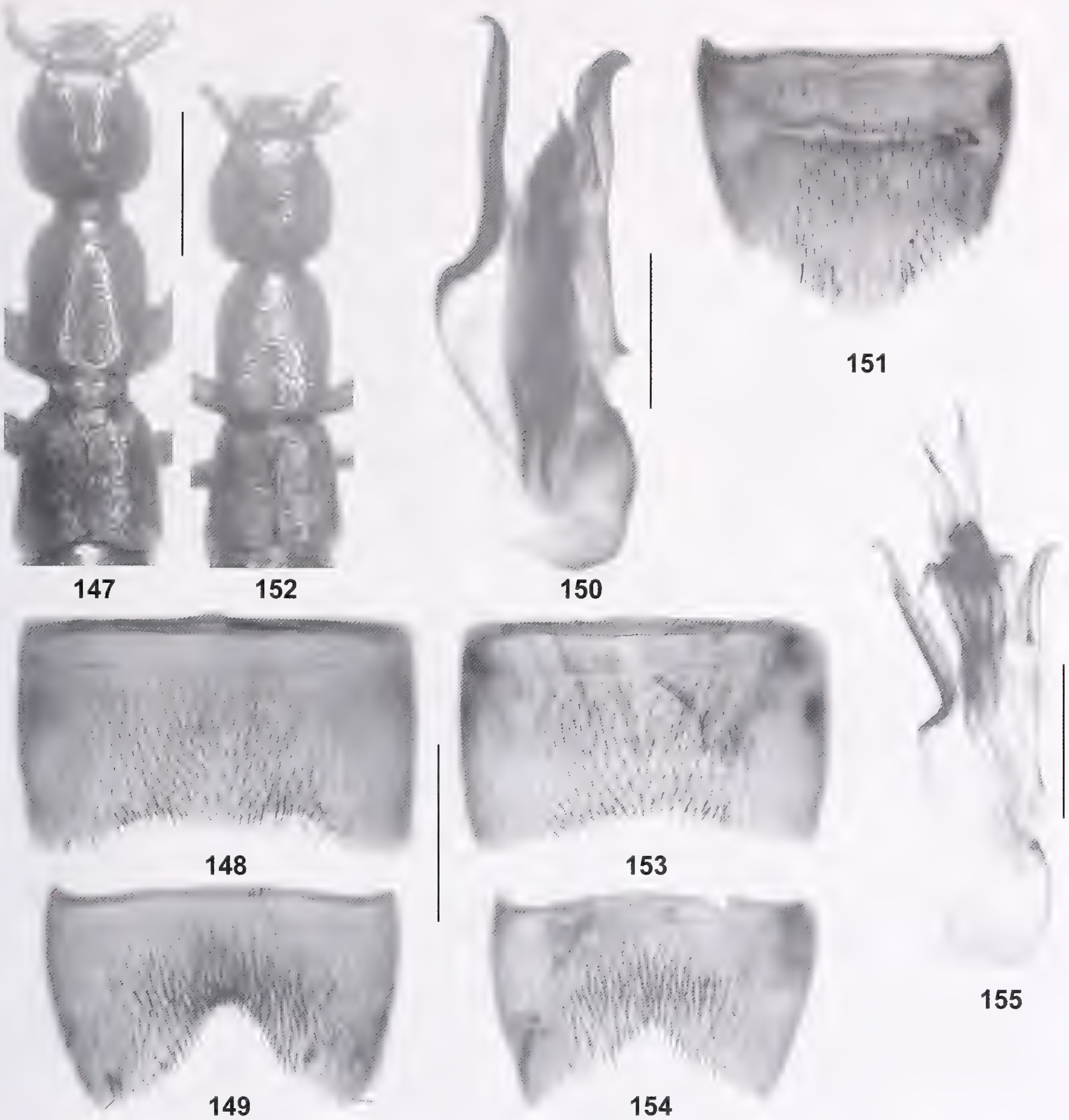
Comparative notes. *Lathrobium apalatum* is reliably distinguished from other representatives of the *L. deuvei* group by the shape of the aedeagus (especially the stouter apex of the ventral process), the shape and chaetotaxy of the male sternite VII, the deeper and broader posterior excision of the male sternite VIII, as well as by the completely different shape of the female sternite VIII.

Etymology. The specific epithet (Latin, adjective) signifies that, in contrast to other species of the *L. deuvei* group, the female sternite VIII is not conspicuously produced posteriorly.

Distribution and natural history. The species is only known from the Meme (or Mimi) Pokhari in the southern Manaslu Himal (Fig. 126). The specimens were collected at an altitude of 4300–4400 m; one of them is teneral.

Lathrobium rupinaicum sp. n. (Figs 126, 152–155)

Type material. Holotype ♂ [dissected prior to present study]: "Nepal-Expeditionen Jochen Martens / 241 Gorkha Dist., Rupina La, S-Seite, 4500–4100 m, 9 Aug



Figs 147–155. *Lathrobium apalatum* (**147–151**) and *L. rupinaicum* (**152–155**). **147, 152:** forebody; **148, 153:** male sternite VII; **149, 154:** male sternite VIII; **150, 155:** aedeagus in lateral view; **151:** female sternite VIII. Scale bars: 147, 152: 1.0 mm; 148–151, 153–155: 0.5 mm.

83 Martens & Schawaller leg. / Lathrobium n. sp. cf. deuvei Coiff., det. 198 [sic] G. de Rougemont / Holotypus ♂ *Lathrobium rupinaicum* sp. n., det. V. Assing 2011" (SMNS). Paratypes: 1♂ [dissected prior to present study]: "Nepal-Expeditionen Jochen Martens / 239 Gorkha Dist., zw. Tabruk und Rupina La, 4400-4500 m, 9Aug83 Martens & Schawaller" (SMNS); 1♂ [dissected prior to present study]: "Nepal-Expeditionen Jochen Martens / 238 Gorkha Dist., zw. Tabruk und Rupina La, 4100–4400 m, 9 Aug 83 Martens & Schawaller" (cAss).

Comment. Two of the type specimens have evidently been subject to post-mortem darkening, most likely as a result of the application of a chemical of unknown identity.

Description. Body length 6.8–7.5 mm; length of forebody 3.2–3.4 mm. Coloration: whole body reddish. Externally highly similar to the preceding species, except for the smaller size (Fig. 152).

♂: posterior margin of tergite VIII truncate; sternite VII with shallow and weakly bisinuate posterior excavation, anterior margin of this excavation with longer black setae (Fig. 153); sternite VIII in the middle with extensive cluster of dense blackish setae, posterior excision broad and moderately deep (Fig. 154); aedeagus (Fig. 155) 1.3–1.4 mm long, of similar general morphology as in *L. deuvei*.

♀: unknown.

Comparative notes. *Lathrobium rupinaicum* is distinguished from other representatives of the *L. deuvei* group by the smaller average size (see measurements of length of forebody), by the shape and chaetotaxy of the male sternites VII and VIII, as well as by the distinctly smaller aedeagus with a much shorter dorsal plate.

Etymology. The specific epithet (adjective) is derived from the name of the pass where this species was discovered.

Distribution and natural history. The type specimens were collected in three localities near Rupina La, a pass in the southern Manaslu Himal (Fig. 126), central Nepal, at altitudes of 4100–4500 m.

***Lathrobium barthei* Coiffait, 1987** (Figs 126, 156–160)
Lathrobium alticola Coiffait, 1975: 331 f.; preoccupied.
Lathrobium barthei Coiffait, 1987: 497; replacement name.

Type material examined. Holotype ♂: "Umg. Mahidoela-Paß, 5000 m, b. Maharigaon / Pa 208 [overleaf] / Gebiet von Jumla, Westnepal, lg. H. Franz / Holotype / Lathrobium alticola H. Coiffait 1975 / Lathrobium barthei Coiffait, det. V. Assing 2011" (NHMW).

Comment. The original description of *L. alticola* is based on a unique male holotype from "Environs du Col de Mahidoela, 5000 m, près de Maharigaon, région de Jula, Népal occidental" (Coiffait 1975). The preoccupied name *L. alticola* was subsequently replaced with *L. barthei* by Coiffait (1987).

Redescription. Body length 8.2 mm; length of forebody 4.3 mm. Forebody as in Fig. 156. Coloration: whole body reddish. Other external characters similar to those of *L. deuvei*.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII weakly convex; sternite VII shallowly, but extensively impressed and with numerous blackish setae posteriorly, posterior margin strongly excavated in the middle, anterior margin of this excavation not bisinuate (Fig. 157); sternite VIII weakly impressed and with dense blackish pubescence in the middle, posterior excision pronounced, deep, acute, and slightly asymmetric (Fig. 158); aedeagus large, approximately 1.6 mm long; ventral process long and slender; dorsal plate with lamellate basal portion and with long, slender, strongly sclerotised, and apically hooked apical portion; internal sac with very long, slender, and apically acute sclerotised structures (Figs 159–160). (Note that the apex of the ventral process is evidently broken off in the holotype.)

♀: unknown.

Comparative notes. As can be inferred from the similarly derived shape and chaetotaxy of the male sternites VII and VIII, as well as from the similarly derived morphology of the aedeagus, *L. barthei* is evidently closely related to *L. deuvei* and its allies. It is reliably distinguished from other representatives of this group only by the male primary and secondary sexual characters.

Distribution and natural history. *Lathrobium barthei* is the only representative of the *L. deuvei* group in West Nepal; all other species of this group are distributed in central Nepal. The holotype was collected at the Mahidoela pass [29°20'N, 82°23'E] near Maharigaon, Jumla region (Fig. 126), at an altitude of 5000 m. According to Franz′ diary, the holotype was sifted from moss at rocks near snow on 23.V.1972. In contrast to the altitude stated on the label, the altitude specified in the diary is 5200 m.

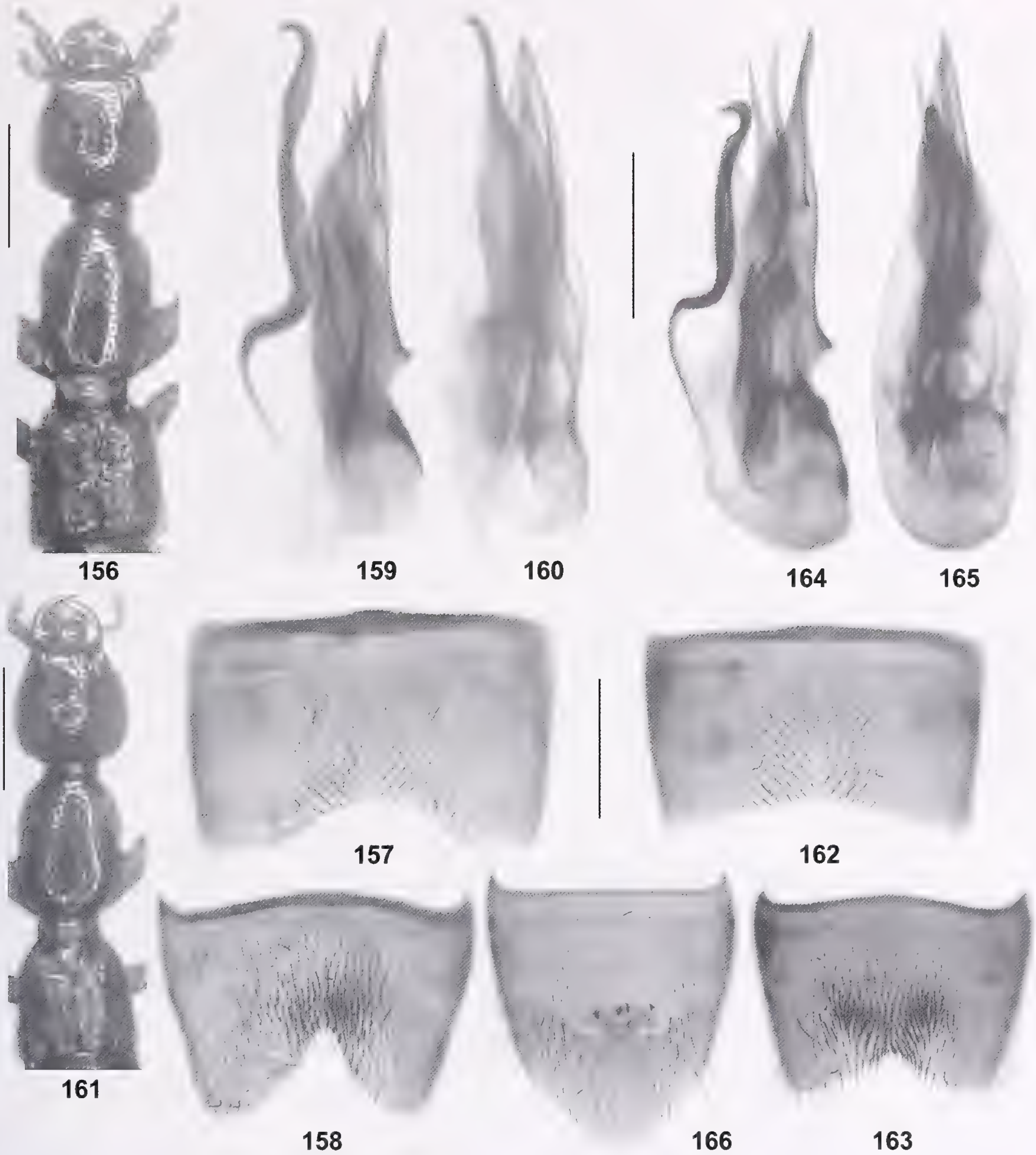
***Lathrobium ganeshense* Coiffait, 1983** (Figs 126, 161–166)
Lathrobium ganeshensis [sic] Coiffait, 1983: 170.

Type material examined. Holotype ♂: "Népal VII.82, Ganesh Himal, Lari, 4500 TD / Holotype / Lathrobium ganeshensis [sic] H. Coiffait 1983 / Lathrobium ganeshense Coiffait, det. V. Assing 2011" (MNHNP). Paratypes: 1♂, 1♀: same data as holotype (MNHNP).

Comment. The original description is based on a male holotype and five paratypes (four males and one female) from "Ganesh Himal, Lari, 4500 m" (Coiffait 1983), all of them deposited in the Coiffait collection.

Additional material examined. Nepal: 20 exs., Ganesh Himal, Jaisuli Kund env., 4300–4500 m, 13.–16.VI.2000 (SNSD, cAss).

Redescription. Body length 6.7–8.0 mm; length of forebody 3.2–3.9 mm. Forebody as in Fig. 161. Apart from the slightly smaller body size, externally highly similar to *L. barthei* (including coloration).



Figs 156–166. *Lathrobium barthei* (**156–160**) and *L. ganeshense* (**161–166**). **156, 161:** forebody; **157, 162:** male sternite VII; **158, 163:** male sternite VIII; **159, 164:** aedeagus in lateral view; **160, 165:** aedeagus in ventral view; **166:** female sternite VIII. Scale bars: 156, 161: 1.0 mm; 157–160, 162–166: 0.5 mm.

♂: protarsomeres I–IV moderately dilated; posterior margin of tergite VIII weakly convex; sternite VII strongly transverse, with shallow, extensive median impression posteriorly, this impression with numerous blackish setae, posterior margin broadly concave (Fig. 162); sternite VIII transverse, with shallow impression posteriorly, this impression with cluster of very dense black setae, posterior excision broadly V-shaped, but not very deep, its depth approximately 1/4 the length of sternite (Fig. 163); aedeagus 1.6 mm long, with long, almost straight, slender, and apically acute ventral process, a bisinuate (lateral view) and apically strongly hooked dorsal plate composed of a lamellate basal and a strongly sclerotised apical portion, internal sac with two long sclerotised structures (Figs 164–165).

♀: protarsomeres I–IV dilated, but slightly less so than in male; posterior margin of tergite VIII weakly convex; sternite VIII distinctly longer than tergite VIII, its posterior margin moderately convexly produced in the middle (Fig. 166); tergite IX undivided in the middle; tergite X shorter than tergite IX in the middle.

Comparative notes. *Lathrobium ganeshense* is distinguished from other species of the *L. deuvei* group by slightly smaller body size, the shape of the posterior margin of the strongly transverse male sternite VII, the shape (posteriorly less deeply excised) and chaetotaxy (presence of a cluster of dense black setae in the middle) of the male sternite VIII, the morphology of the aedeagus, as well as by the shape of the female sternite VIII.

Distribution and natural history. The type locality, Lari (a zinc mine; approximately 28°14'N, 85°11'), is situated to the southeast of the Paldol peak in the Ganesh Himal, central Nepal. The additional material was collected near Jaisuli Kund [28°13'N, 85°13'E] (Fig. 126). The specimens were collected at an altitude of 4300-4500 m.

The *Lathrobium discissum* group

Lathrobium discissum sp. n. (Figs 126, 167–174)

Type material. Holotype ♂: "India W. Bengal, Darjeeling distr., Tonglu 3100 m 16.X.1978, Besuchet-Löbl / Holotypus ♂ *Lathrobium discissum* sp. n., det. V. Assing 2012" (MHNG). Paratypes: 4♂♂, 4♀♀ [4 exs. at least slightly teneral]: same data as holotype (MHNG, cAss); 1♂: same data, but 2700 m (cAss); 2♂♂, 1♀: "Nepal-Expeditionen Jochen Martens / 324 Panchthar Distr., Dhorpar Kharka, mature *Rhododendron-Lithocarpus* forest, 2700 m, 13.–16 Apr 88 Martens & Schawaller" (SMNS, cAss).

Description. Species of moderately large size; body length 7.5–9.0 mm; length of forebody 3.1–3.8 mm. Habitus as in Fig. 167. Coloration: head and pronotum reddish-brown to blackish-brown; elytra reddish to reddish-brown; abdomen dark-brown to blackish; legs reddish to dark-brown; antennae reddish.

Head (Fig. 168) approximately as broad as long or weakly oblong; punctation moderately coarse and rather sparse; interstices with distinct fine microreticulation, almost matt, distinctly broader than diameter of punctures. Eyes small, but composed of more than 20 ommatidia, not projecting from lateral contours of head, and 1/5–1/4 the length of postocular region in dorsal view.

Pronotum (Fig. 168) relatively slender, 1.25–1.30 times as long as broad and approximately as broad as head, or nearly so; lateral margins almost subparallel in dorsal view; punctation similar to that of head; interstices without microsculpture and glossy.

Elytra short, approximately 0.55 times as long as pronotum (Fig. 168) ; humeral angles weakly marked; punctation fine, shallow, and ill-defined; interstices with barely noticeable traces of microsculpture. Hind wings completely reduced. Metatibia somewhat compressed, but otherwise unmodified.

Abdomen broader than elytra, widest at segment VI; punctation dense and moderately fine; interstices with shallow, finely transverse microsculpture; posterior margin of tergite VII without palisade fringe.

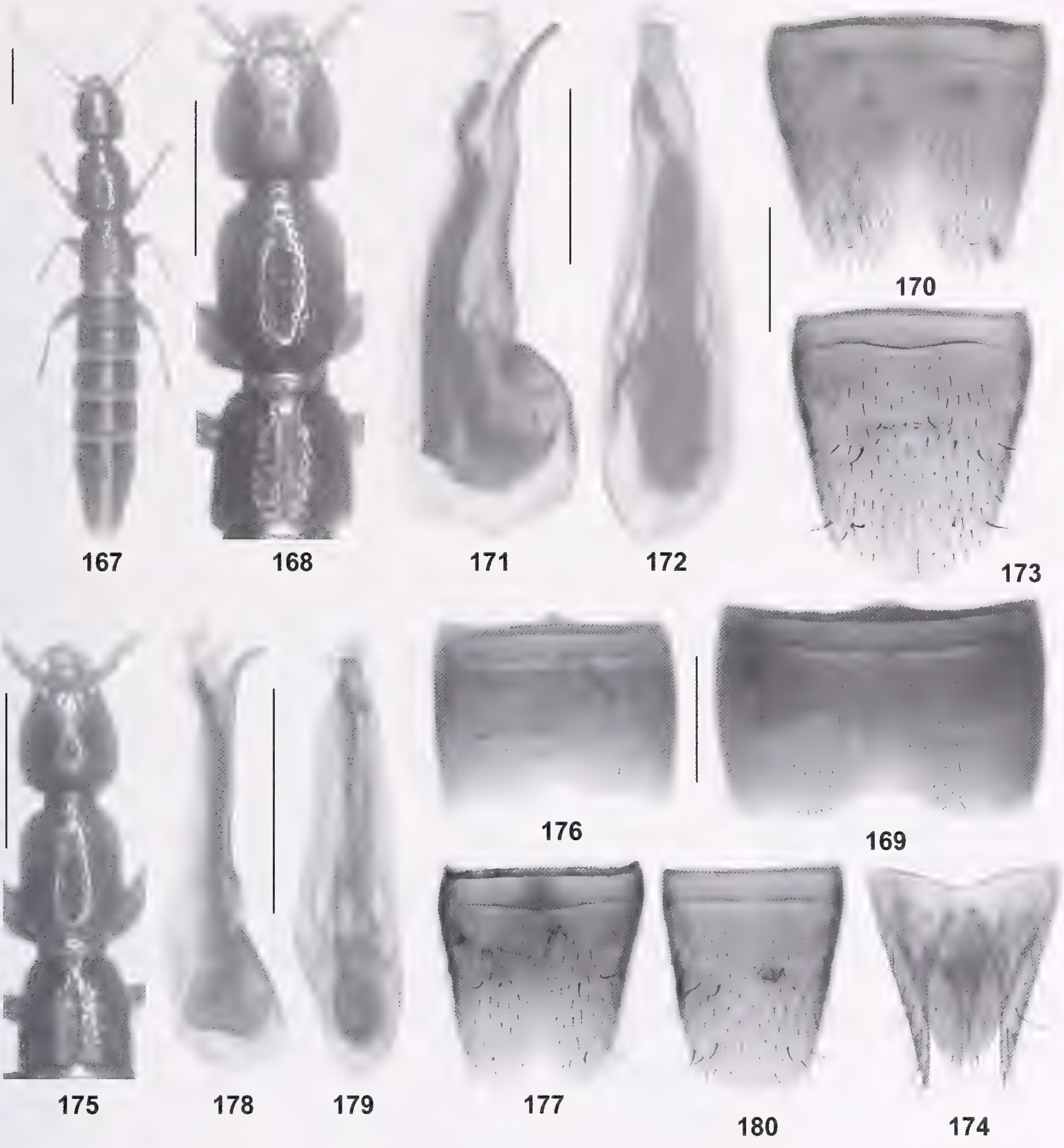
♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII weakly convex; sternite VII with shallow median impression posteriorly, posterior margin distinctly concave in the middle, this concavity with fringe of longer setae (Fig. 169); sternite VIII with impunctate median impression posteriorly, posterior excision moderately deep and broad (Fig. 170); aedeagus approximately 1.5 mm long and slender, without distinct dorsal plate; ventral process long, slender, and apically truncate in ventral view; internal sac with long, dark, membranous tube (Figs 171–172).

♀: protarsomeres I-IV dilated, but somewhat less so than in male; tergite VIII of similar shape as in male; sternite VIII only slightly longer than tergite VIII and with strongly convex posterior margin (Fig. 173); tergite IX almost completely divided in the middle, tergite X almost reaching anterior margin of tergite IX (Fig. 174).

Comparative notes. *Lathrobium discissum* is undoubtedly most closely related to the similar, but distinctly smaller, syntopic *L. separatum*; for characters distinguishing these species see the comparative notes in the following section. Both species are separated from all other Himalayan congeners by the modifications of the male sternites VII and VIII, by the morphology of the aedeagus (slender, ventral process apically truncate in ventral view, long dark membranous tube in the internal sac, absence of a distinct dorsal plate), as well as by the almost completely divided female tergite IX.

Etymology. The specific epithet (Latin, past participle of discindere: to tear or cut apart) refers to the divided female tergite IX.

Distribution and natural history. *Lathrobium discissum* was found in two localities near Tonglu [27°02'N, 88°05'E] in Darjeeling district, West Bengal, North India, and in one locality [27°05'N, 87°55'E] in the very east of Nepal (Fig. 126). The specimens were collected at altitudes of 2700 and 3100 m, in two localities together with *L. separatum*. Some of the type specimens from India are teneral.



Figs 167–180. *Lathrobium discissum* (**167–174**) and *L. separatum* (**175–180**). **167:** habitus; **168, 175:** forebody; **169, 176:** male sternite VII; **170, 177:** male sternite VIII; **171, 178:** aedeagus in lateral view; **172, 179:** aedeagus in ventral view; **173, 180:** female sternite VIII; **174:** female abdominal segments IX–X. Scale bars: 167–168, 175: 1.0 mm; 169–174, 176–180: 0.5 mm.

Lathrobium separatum **sp. n.** (Figs 3, 175–180)

Type material. Holotype ♂: "India W. Bengal, Darjeeling distr., Tonglu 3100 m 16.X.1978, Besuchet-Löbl / Holotypus ♂ *Lathrobium separatum* sp. n., det. V. Assing 2011" (MHNG). Paratypes: 2♂♂, 2♀♀: same data as holotype (MHNG, cAss); 5♀♀: same data, but 2700 m (MHNG, cAss).

Description. Rather small species; body length 5.5–6.5 mm; length of forebody 2.7–3.0 mm. Coloration: head and pronotum reddish to brown; elytra reddish to reddish-brown; abdomen dark-brown; legs and antennae reddish.

Head (Fig. 175) weakly oblong; punctation moderately coarse and rather sparse; interstices with distinct fine microsculpture, almost matt, distinctly broader than diameter of punctures. Eyes small, but composed of more than

20 ommatidia, not projecting from lateral contours of head, and approximately 1/5 the length of postocular region in dorsal view.

Pronotum (Fig. 175) relatively slender, approximately 1.3 times as long as broad, or nearly so, and approximately as broad as head; lateral margins almost subparallel in dorsal view; punctation similar to that of head; interstices without microsculpture and glossy.

Elytra short, 0.55–0.60 times as long as pronotum (Fig. 175); humeral angles weakly marked; punctation fine, shallow, and ill-defined; interstices with barely noticeable traces of microsculpture. Hind wings completely reduced. Metatibia somewhat compressed, but otherwise unmodified.

Abdomen broader than elytra, widest at segment VI; punctation dense and moderately fine; interstices with fine transverse microsculpture; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII weakly convex; sternite VII with shallow median impression posteriorly and with sparse, unmodified pubescence, posterior margin broadly and weakly concave (Fig. 176); sternite VIII with narrow impunctate median impression posteriorly, pubescence unmodified, posterior excision very shallow (Fig. 177); aedeagus 0.9–1.0 mm long and slender, without distinct dorsal plate; ventral process long, slender, subapically curved (lateral view), and apically truncate (ventral view); internal sac with long, dark, membranous tube (Figs 178–179).

♀: protarsomeres I–IV dilated, but somewhat less so than in male; tergite VIII of similar shape as in male; sternite VIII only slightly longer than tergite VIII and with convex posterior margin (Fig. 180); tergite IX almost completely divided in the middle, tergite X almost reaching anterior margin of tergite IX.

Comparative notes. Based on the similar morphology of the male sexual characters, as well as on the almost completely separated female tergite IX, clearly a synapomorphic character, *L. separatum* is apparently the sister species of the syntopic *L. discissum*. It is distinguished from this species by distinctly smaller body size (no overlap), the shape and chaetotaxy of the male sternite VII and VIII, and the much smaller and more slender aedeagus.

Etymology. The specific epithet (Latin, adjective) refers to the divided female tergite IX.

Distribution and natural history. *Lathrobium separatum* was found in two localities near Tonglu in Darjeeling district, West Bengal, North India (Fig. 3). The specimens were collected at altitudes of 2700 and 3100 m, together with *L. discissum*.

The *Lathrobium jumlense* group

Lathrobium jumlense Coiffait, 1982 (Figs 96, 181–186)

Lathrobium jumlensis [sic] Coiffait, 1982a: 89 f.

Type material examined. Holotype ♂: "Dampa-Paß, gegen Chauta / Gebiet von Jumla, Westnepal, lg. H. Franz / Pa 229 [overleaf] / Type / Lathrobium jumlensis [sic] H. Coiffait 1979 / Lathrobium jumlense Coiffait, det. V. Assing 2011" (NHMW). Paratype ♀: same data as holotype (NHMW).

Comment. The original description is based on a male holotype and three paratypes, a male and two females, from "Népal, Dampa Pass, près Chanta, région de Jumla" (Coiffait 1982a). The holotype and a female paratype were located in the Franz collection at the NHMW.

Redescription. Small species, body length 4.1–4.5 mm; length of forebody 1.8–1.9 mm. Coloration: body uniformly yellowish-red.

Head (Fig. 181) weakly oblong, nearly 1.1 times as long as broad, dilated posteriad; punctation moderately coarse and very sparse; interstices much broader than diameter of punctures and with shallow microreticulation. Eyes not projecting from lateral contours of head, very small, composed of approximately ten ommatidia.

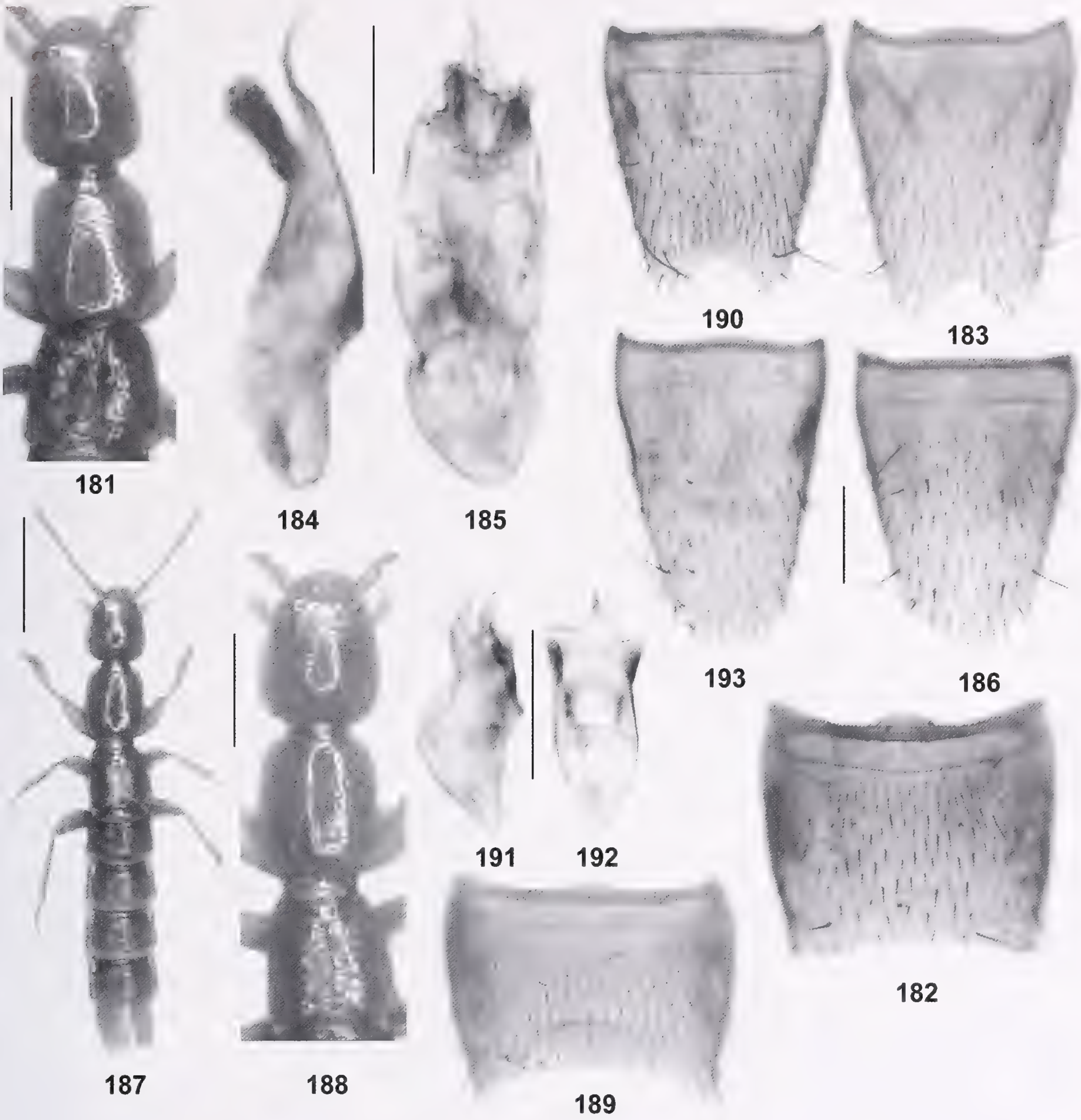
Pronotum (Fig. 181) rather broad, approximately 1.2 times as long as broad and as broad as head; posterior margin truncate to weakly concave; punctation similar to that of head, but somewhat less sparse; interstices without microsculpture.

Elytra short, approximately 0.6 times as long as pronotum (Fig. 181); humeral angles weakly marked; punctation shallow, fine, and sparse; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia slightly compressed.

Abdomen slender and with subparallel margins, approximately as broad as elytra; punctation moderately fine and dense; posterior margin of tergite VII without palisade fringe; posterior margin of tergite VIII truncate to weakly convex in both sexes.

♂: protarsomeres I–IV strongly dilated; sternite VII relatively weakly transverse, without modified setae, and with very weakly concave posterior margin (Fig. 182); sternite VIII distinctly oblong, without modified setae, and with rather broad, moderately deep, and almost semi-circular posterior excision (Fig. 183); aedeagus small, approximately 0.65 mm long, ventral process broad and apically very acute in ventral view, thin and sinuate in lateral view; dorsal plate weakly sclerotised (Figs 184–185).

♀: protarsomeres I–IV dilated, but slightly less so than in male; sternite VIII oblong, only slightly longer than tergite VIII, and convexly produced posteriorly (Fig. 186);



Figs 181–193. *Lathrobium jumlense* (**181–186**) and *L. inustum* (**187–193**). **181, 188:** forebody; **182, 189:** male sternite VII; **183, 190:** male sternite VIII; **184, 191:** aedeagus in lateral view; **185, 192:** aedeagus in ventral view; **186, 193:** female sternite VIII; **187:** habitus. Scale bars: 187: 1.0 mm; 181, 188: 0.5 mm; 182–186, 189–193: 0.2 mm.

tergite IX undivided; tergite X approximately as long as tergite IX in the middle.

Comparative notes. The similar external characters and particularly the similar general morphology of the aedeagus (ventral process broad and apically acute in ventral view, sclerotised internal structures absent) suggest that *L. jumlense* is closely related to *L. inustum*. For characters separating these two species see the following section. From the externally similar species of the *L. pectinatum* and *L. aculeatum* groups, *L. jumlense* is readily distinguished by the absence of pectinate setae on the male sternite VII and by the completely different morphology of the aedeagus, respectively.

Distribution and natural history. The type locality is situated in Jumla district, western Nepal (Fig. 96). According to Franz′ diary, the type specimens were sifted from leaf litter in a birch and fir forest with bamboo at an altitude of 3500 m on 29.IX.1972.

Lathrobium inustum Coiffait, 1982 (Figs 96, 187–193)

Lathrobium inustum Coiffait, 1982a: 88 f.

Type material examined. Holotype ♂: "Umg. Maharigaon, 3000-3500 m / Pa 200 [overleaf] / Gebiet von Jumla, Westnepal, lg. H. Franz / Type / Lathrobium inustum H. Coiffait 1979 / Lathrobium inustum Coiffait, det. V. Assing 2011" (NHMW). Paratypes: 2♂♂, 1♀ [♀ without head and pronotum]: same data as holotype (NHMW); 1♀: "Dzunda Khola-Tal b. Talphi 3000-3500 m / Pa 194 [overleaf] / Gebiet von Jumla, Westnepal, lg. H. Franz / Paratype" (NHMW).

Comment. The original description is based on a male holotype and five paratypes, two males and three females, from "Népal, environs de Maharigaon, région de Jumla", one male paratype from "Népal, Environs de Alm Darghari, 4000 m", and four paratypes, one male and three females, from, "Népal, Dzunda Khola Tal, près Talphi" (Coiffait 1982a). The holotype and four paratypes were located in the Franz collection at the NHMW. The specimens listed as additional material below were evidently collected together with the types, but not included in the type series.

Additional material examined. Nepal: 6 exs., "Dzunda Khola-Tal b. Talphi 3000-3500 m / Pa 194 [overleaf] / Gebiet von Jumla, Westnepal, lg. H. Franz" (NHMW, cAss); 3 exs., "Umg. Alm Darghari b. Maharigaon, 4000 m / Pa 211 [overleaf] / Gebiet von Jumla, Westnepal, lg. H. Franz" (NHMW, cAss).

Redescription. Small species, body length 3.6–4.8 mm; length of forebody 1.7–2.1 mm. Habitus and forebody as in Figs 187–188. Coloration: body uniformly yellowish-red. External characters as in *L. jumlense*.

♂: protarsomeres I–IV strongly dilated; sternite VII moderately transverse, without modified setae, and with broadly concave posterior margin (Fig. 189); sternite VIII distinctly oblong, without modified setae, and with rather broad, moderately deep, and almost semi-circular posterior excision (Fig. 190); aedeagus minute, approximately 0.30–0.35 mm long, subapical portion broad in ventral view; ventral process weakly sclerotised, almost membranous, and apically acute in ventral view; dorsal plate weakly sclerotised (Figs 191–192).

♀: protarsomeres I–IV dilated, but slightly less so than in male; sternite VIII oblong, only slightly longer than tergite VIII, and with convex posterior margin (Fig. 193); tergite IX undivided; tergite X approximately as long as tergite IX in the middle.

Comparative notes. As can be inferred from the similar external characters and particularly the similar sexual characters (male sternite VII without modified setae; male sternite VIII without modified setae and with almost semi-circular posterior excision; aedeagus small, subapically broad in ventral view, with weakly sclerotised, short, and apically acute ventral process, and with weakly sclerotised dorsal plate; shape of female sternite VIII), *L. inustum* is most closely related to *L. jumlense*. It is readily distinguished from this species by the more transverse male sternite VII, as well as by the much smaller and differently shaped aedeagus. In fact, the aedeagus is distinctly smaller than in any other Himalayan representative of the genus.

Distribution and natural history. This species is currently known from three geographically close localities near Maharigaon [29°20'N, 82°23'E] and Talphi [29°18'N, 82°22'E] in Jumla district, western Nepal (Fig. 96). The specimens were collected at altitudes of 3000–4000 m. According to Franz′ diary, the holotype was sifted near "Sinamoro [?]" from leaf litter and moss in a forest on 21.IX.1972, the specimens from "Alm Darghari" near "Sinamoro [?]" from leaf litter, and the specimens from the environs of Talphi were collected in a forest near "Alm Kharana [?]" on 20.IX.1972.

Lathrobium planissimum sp. n. (Figs 96, 274–281)

Type material. Holotype ♂: "Nepal P. Mahakali, D Darchula, 14 km NNE, Ghusa, 3450 m, plateau before Api / 29°56'06''N, 80°56'36''E, leg. M. Hartmann, 8./9.VI.2005, sieving in deciduous forest / Holotypus ♂ *Lathrobium planissimum* sp. n., det. V. Assing 2012" (NME). Paratypes: 2♂♂, 5♀♀: same data as holotype (NME, cAss).

Description. Small species, body length 4.2–4.6 mm; length of forebody 1.9–2.1 mm. Habitus as in Fig. 274. Coloration: body uniformly reddish. External characters as in *L. jumlense* and *L. inustum*.

♂: protarsomeres I-IV strongly dilated; sternite VII moderately transverse, without modified setae, and with broadly concave posterior margin (Fig. 275); sternite VIII oblong, without modified setae, and with broadly V-shaped posterior excision (Fig. 276); aedeagus small, approximately 0.60 mm long, dorso-ventrally conspicuously flattened; ventral process broad; dorsal plate weakly sclerotised (Figs 277–279).

♀: protarsomeres I–IV dilated, but slightly less so than in male; sternite VIII oblong, only somewhat longer than tergite VIII, and with convex posterior margin (Figs

280–281); tergite IX undivided; tergite X approximately as long as tergite IX in the middle.

Comparative notes. As can be inferred from the similar external and male sexual characters, *L. planissimum* belongs to the *L. jumlense* group. It is distinguished from the other two species of this group only by the different shape of the posterior excision of the male sternite VIII, as well as by the different morphology of the aedeagus.

Distribution and natural history. The type locality is situated in the southern slopes of the Byasrikh Himal, Mahakali province, in the very northwest of Nepal. The specimens were sifted from leaf litter in a deciduous forest at an altitude of 3450 m.

The *Lathrobium aculeatum* group

Lathrobium aculeatum Coiffait, 1982 (Figs 96, 194–198)

Lathrobium aculeatum Coiffait, 1982a: 88.

Type material examined. Holotype ♂: "nördl. Dhaulagiri, Gompa/Tarakot [ca. 28°51'N, 83°00'E], 3300–3400 m, 2.-6.VI.1973 / Type / Holotypus / Lathrobium aculeatum H. Coiffait 1979" (FSF). Paratype ♀: same data as holotype, but "Paratypus" (FSF).

Comment. The original description is based on a male holotype and five paratypes from "Népal, nördl. Dhaulagiri, Gompa/Tarakot, 3300-3400 m" (Coiffait 1982a). The holotype and a female paratype were examined. The former is somewhat teneral, which explains the misleading illustration of the aedeagus in Coiffait (1982a).

Redescription. Body length 5.0–5.3 mm; length of forebody 2.3–2.4 mm. Coloration: body more or less uniformly reddish.

Head distinctly oblong, approximately 1.1 times as long as broad; punctation moderately coarse and rather sparse in median dorsal portion, somewhat less sparse in posterior and lateral portions, but interstices on average broader than diameter of punctures; interstices with fine, shallow microreticulation. Eyes very small, with fewer than ten ommatidia.

Pronotum approximately 1.25 times as long as broad and slightly broader than head; punctation similar to that of head, but slightly finer; interstices without microsculpture.

Elytra short, approximately 0.6 times as long as pronotum; humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia unmodified.

Abdomen broader than elytra; punctation relatively coarse and dense; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII truncate; sternite VII weakly impressed posteriorly, pubescence unmodified, posterior margin broadly and weakly concave (Fig. 194); sternite VIII oblong, pubescence unmodified, posterior excision relatively narrow and moderately deep (Fig. 195); aedeagus 1.0 mm long and slender, with very long and thin ventral process (but ventral process shorter than basal portion of aedeagus), lamellate dorsal plate, and without sclerotised internal structures (Figs 196–197).

♀: protarsomeres I–IV distinctly dilated, but slightly less so than in male; tergite VIII with weakly convex posterior margin; sternite VIII oblong, gradually tapering posteriad, posterior margin convex (Fig. 198); tergite IX not divided in the middle; tergite X slightly longer than tergite IX in the middle.

Comparative notes. *Lathrobium aculeatum* is characterised particularly by the conspicuously slender shape of the aedeagus and the ventral process, as well as by the reduced eyes, oblong head, and the shape and chaetotaxy of the male sternites VII and VIII. It is evidently most closely related to *L. spiculatum*, from which it is distinguished particularly by the distinctly shorter ventral process of the aedeagus and by the narrower posterior excision of the male sternite VIII.

Distribution and natural history. *L. aculeatum* is probably endemic to the Dhaulagiri range (Fig. 96). The type specimens were collected at an altitude of 3300–3400 m.

Lathrobium spiculatum sp. n. (Figs 96, 199–213)

Type material: Holotype ♂: "Nepal (Prov. Bagmati), Yangri Ridge, 4200 m, 21.IV.81, Löbl & Smetana / Holotypus ♂ *Lathrobium spiculatum* sp. n., det. V. Assing 2011" (cSme). Paratypes: 4♂♂, 7♀♀: same data as holotype (MHNG, cSme, cAss); 5♀♀: "Nepal (Prov. Bagmati), Yangri Ridge, 4200 m, 23.IV.81, Löbl & Smetana" (MHNG, cAss); 7♂♂, 2♀♀: "Nepal (Prov. Bagmati), Yangri Ridge, 4150 m, 24.IV.81, Löbl & Smetana" (cSme, cAss); 7♂♂, 8♀♀ [2 exs. teneral]: "Nepal (Prov. Bagmati), Yangri Ridge, 4350 m, 22.IV.81, Löbl & Smetana" (MHNG, cSme, cAss); 2♂♂, 2♀♀: "Nepal (Prov. Bagmati), Yangri Ridge, 4700–4800 m, 22.IV.81, Löbl & Smetana" (MHNG, cSme, cAss); 9♂♂, 8♀♀ [partly teneral]: "Nepal (Prov. Bagmati), Mere Dara, 3200 m, 8.IV.81, Löbl & Smetana" (MHNG, cSme, cAss); 1♀: "Nepal (Prov. Bagmati), Mere Dara, 3100-3300 m, 7.IV.81, Löbl & Smetana" (cSme); 1♂, 2♀♀: "Nepal (Prov. Bagmati), near Mere Dara, 3000 m, 7.IV.81, Löbl & Smetana" (MHNG, cSme); 7♂♂, 5♀♀ [partly slightly teneral]: "Nepal (Prov. Bagmati), below Thare Pati, 3300 m, 11.IV.81, Löbl & Smetana" (MHNG, cSme. cAss); 2♂♂: same data, but

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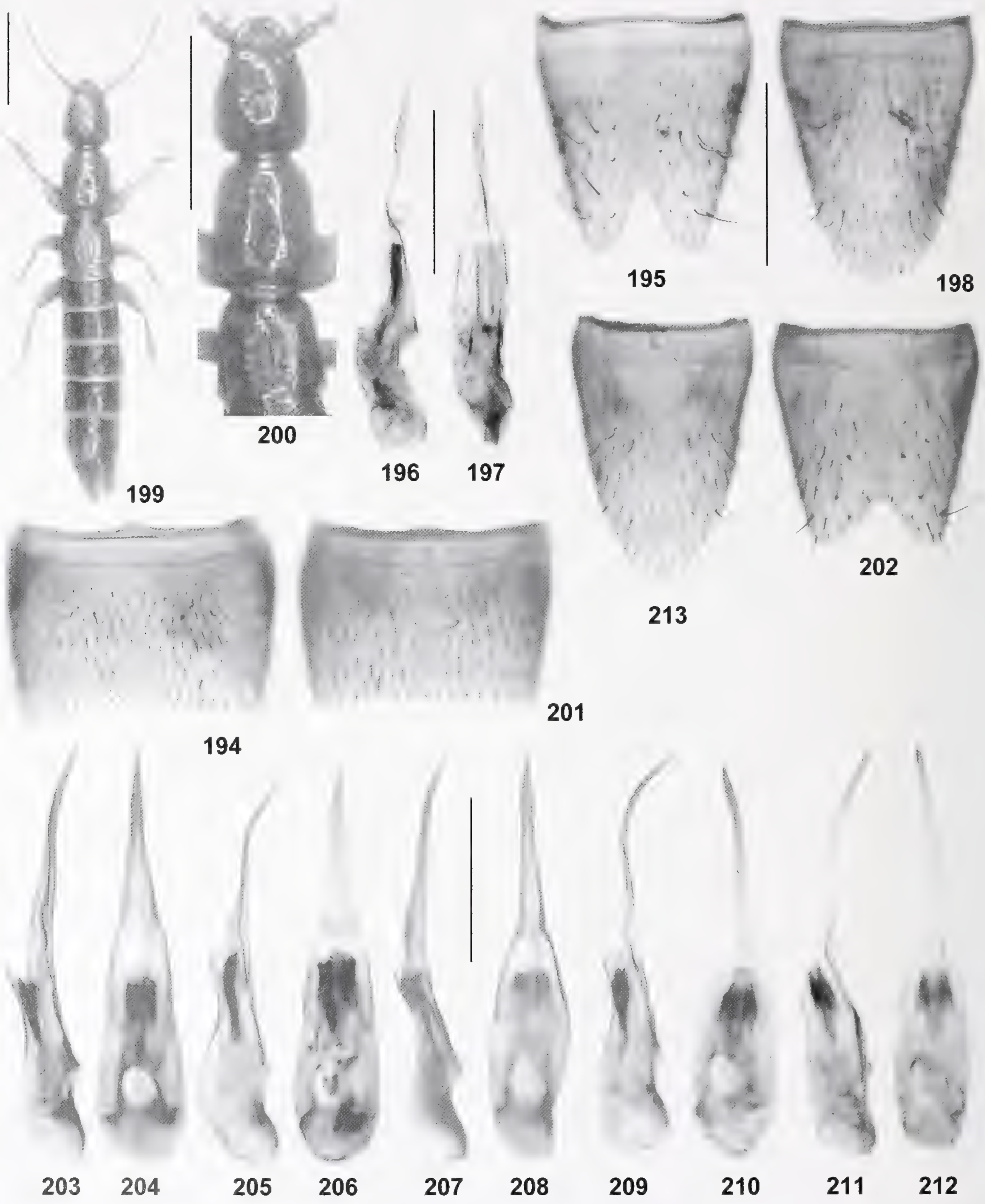
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Figs 194–213. *Lathrobium aculeatum* (**194–198**) and *L. spiculatum* (**199–213**). **194, 201:** male sternite VII; **195, 202:** male sternite VIII; **196, 203, 205, 207, 209, 211:** aedeagus in lateral view; **197, 204, 206, 208, 210, 212:** aedeagus in ventral view; **198, 213:** female sternite VIII; **199:** habitus; **200:** forebody. Scale bars: 199–200: 1.0 mm; 194–198, 201–213: 0.5 mm.

"10.IV.81" (cSme, cAss); 1♂, 6♀♀: "Nepal (Prov. Bagmati), below Thare Pati, 3500 m, 12.IV.81, Löbl & Smetana" (MHNG, cSme, cAss); 2♀♀: "Nepal (Prov. Bagmati), below Thare Pati, 3400 m, 13.IV.81, Löbl & Smetana" (cSme); 4♀♀: "Nepal (Prov. Bagmati), Malemchi, 2900 m, 14.IV.81, Löbl & Smetana" (MHNG, cSme, cAss); 1♂: "Nepal Nuwakot Di., betw. Ghopte and Thare Pati 3150 m, 24.IV.85 A. Smetana" (cAss); 2♂♂ [1 teneral]: same data, but "25.IV.85" (cAss); 1♀: same data, but "3200 m 23.IV.85" (cSme); 1♂: same data, but "3200 m, 26.IV.85" (cSme); 2♀♀: "Zw. Mulkharka u. Tare-Pati / Pa 158* [overleaf] / Zentral-Nepal, Sept.–Okt. 1971, lg. H. Franz / Paratype [of *L. franzi*]" (NHMW).

Description. Body length 4.3–5.3 mm; length of forebody 2.0–2.5 mm. Habitus as in Fig. 199. Coloration: body uniformly reddish.

Head (Fig. 200) distinctly oblong, approximately 1.1 times as long as broad; punctation moderately coarse and rather sparse in median dorsal portion, somewhat less sparse in posterior and lateral portions, but interstices on average broader than diameter of punctures; interstices with fine, shallow microreticulation. Eyes very small, with fewer than ten ommatidia.

Pronotum (Fig. 200) approximately 1.20–1.25 times as long as broad and slightly broader than head; posterior margin weakly concave; punctation similar to that of head; interstices without microsculpture.

Elytra short, approximately 0.6 times as long as pronotum (Fig. 200); humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia somewhat flattened in both sexes.

Abdomen broader than elytra; punctation relatively coarse and dense; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII weakly convex; sternite VII weakly impressed posteriorly, pubescence unmodified, posterior margin broadly and weakly concave (Fig. 201); sternite VIII oblong, posterior excision almost V-shaped and moderately deep, margin of excision with very fine and short setae; tergites and sternite of segments IX–X extremely elongated (Fig. 202); aedeagus 1.2–1.3 mm long and slender, ventral process of somewhat variable shape and variable length, long, thin, and more or less strongly bent ventrad in lateral view, dorsal plate lamellate and weakly sclerotised, internal sac without distinctly sclerotised structures (Figs 203–212).

♀: protarsomeres I–IV dilated, but less so than in male; tergite VIII with truncate to weakly convex posterior margin; sternite VIII oblong, gradually tapering posteriad, posterior margin strongly convex (Fig. 213); tergite IX not divided in the middle; tergite X slightly longer than tergite IX in the middle.

Intraspecific variation. The ventral process of the aedeagus is of remarkably variable length and shape (Figs 203–212). The relative length ranges from slightly shorter to somewhat longer than the basal portion of the aedeagus. The ventral keel in the basal half of the ventral process may be pronounced to practically obsolete. Moreover, the base of the ventral process (ventral view) may range from very thin (much thinner than the basal portion of the aedeagus) to relatively broad and apically gradually tapering. These character conditions are linked by transitional states, even in material from the same locality, so that the observed differences are attributed to intra- rather than interspecific variation.

Comparative notes. This species is characterised particularly by the extremely long ventral process of the aedeagus (distinctly longer even than that of *L. aculeatum*), as well as by the reduced eyes, oblong head, the shape and chaetotaxy of the male sternites VII and VIII, the conspicuously elongated sclerites of the male segments IX and X, and the long female tergite IX (longer in the middle than tergite X).

Etymology. The specific epithet is an adjective derived from the Latin noun spiculum (spine, sting) and alludes to the conspicuously long and thin ventral process of the aedeagus.

Distribution and natural history. *Lathrobium spiculatum* is probably endemic to the Langtang region to the north and northeast of Kathmandu (Fig. 96). The – partly teneral – specimens were collected at altitudes of 2900-4800 m. In some localities, this species was collected together with *L. nepalense* and/or *L. exsertum*. According to Franz′ diary, his specimens were collected in a rhododendron forest above "Bulumje" [?] on 7.X.1971.

The *Lathrobium pectinatum* group

Lathrobium pectinatum Coiffait, 1981 (Figs 214–218)

Lathrobium pectinatum Coiffait, 1981: 329 ff.

Type material examined. Holotype ♂: "Nepal VIII.80, Dudh Pokari / 3000 Himal Chuli D.L / Holotype / Lathrobium pectinatum H. Coiffait 1981 / Lathrobium pectinatum Coiffait, det. V. Assing 2011" (MNHNP). Paratype ♂: same data as holotype (but labelled "Paratype") (MNHNP).

Comment. The original description is based on a male holotype and three paratypes from "Dudh Pokhari, Himal Chuli 3000 m" (Coiffait 1981) deposited in the Coiffait collection.

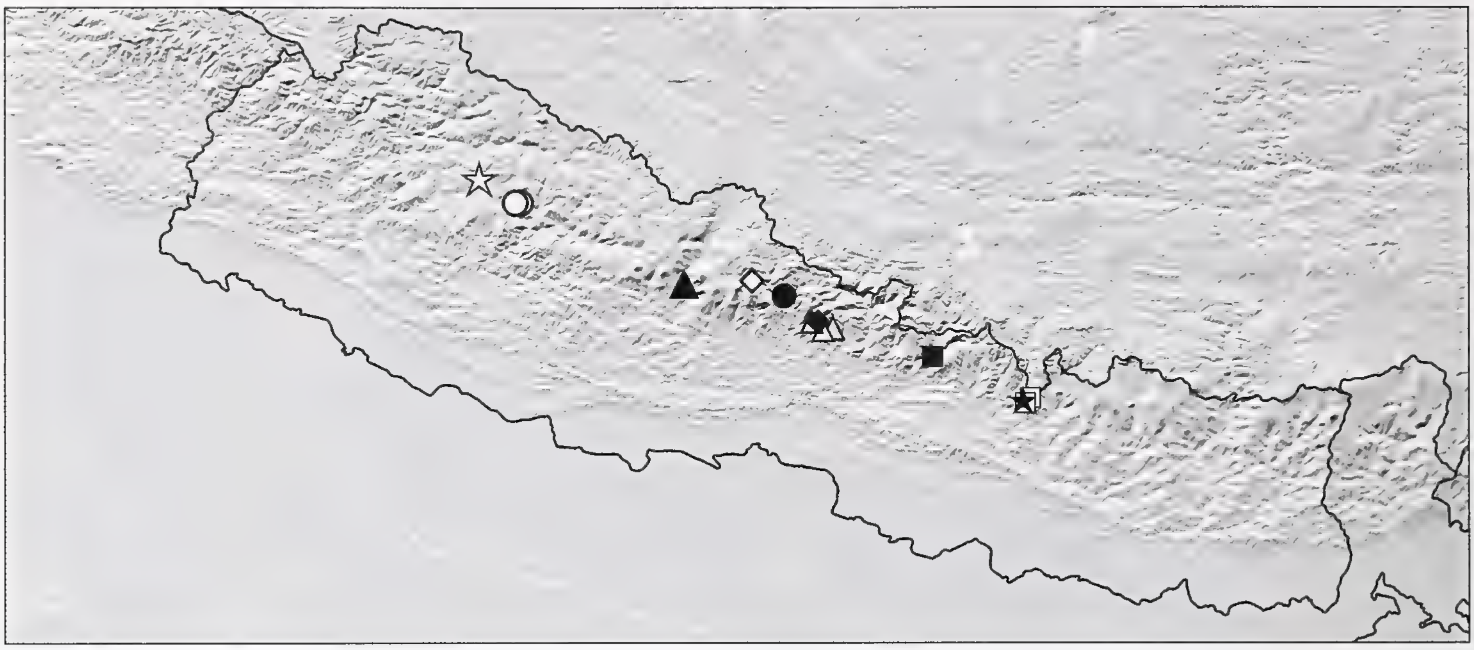


Fig. 214. Distributions of the species of the *L. pectinatum* group: *L. privum* (open star); *L. fodens* (open circles); *L. calcaratum* (filled triangle); *L. barbulatum* (open diamond); *L. barbatum* (filled circle); *L. compressicrus* (filled diamond); *L. pectinatum* (open triangles); *L. cavicrus* (westernmost open triangle); *L. attritum* (filled star); *L. cassagnaui* (open squares).

Additional material examined. Nepal: 1♂, Manaslu, Dudh Pokhari Lekh, between Kharka and Malemchi Kharka [28°18'N, 84°35'E], 3300–3500 m, 12.–13.IX.1995, leg. Schmidt (cAss); 1♂, 11♀♀, Manaslu, SW Merne Pokhari, affluent of Ngadi Khola, spring area, 28°22'N, 84°31'E, 3200–3300 m, 11.V.2005, leg. Schmidt (NME, cAss); 1♂, 2♀♀, Manaslu, E-slope of Ngadi Khola Valley, 28°22'N, 84°30'E, 2800–3000 m, 13.V.2005, leg. Schmidt (NME, cAss).

Redescription. Body length 5.3–6.0 mm; length of forebody 2.5–2.6 mm. Coloration: body uniformly reddish.

Head approximately as long as wide; punctation coarse and rather sparse; interstices with distinct microreticulation, broader than diameter of punctures in median dorsal portion. Eyes not projecting from lateral contours of head, very small, composed of fewer than ten ommatidia.

Pronotum approximately 1.25 times as long as broad and as broad as head; punctation similar to that of head, but slightly less coarse; interstices without microsculpture.

Elytra short, 0.55–0.60 times as long as pronotum; humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia distinctly compressed and somewhat bent, sexually dimorphic.

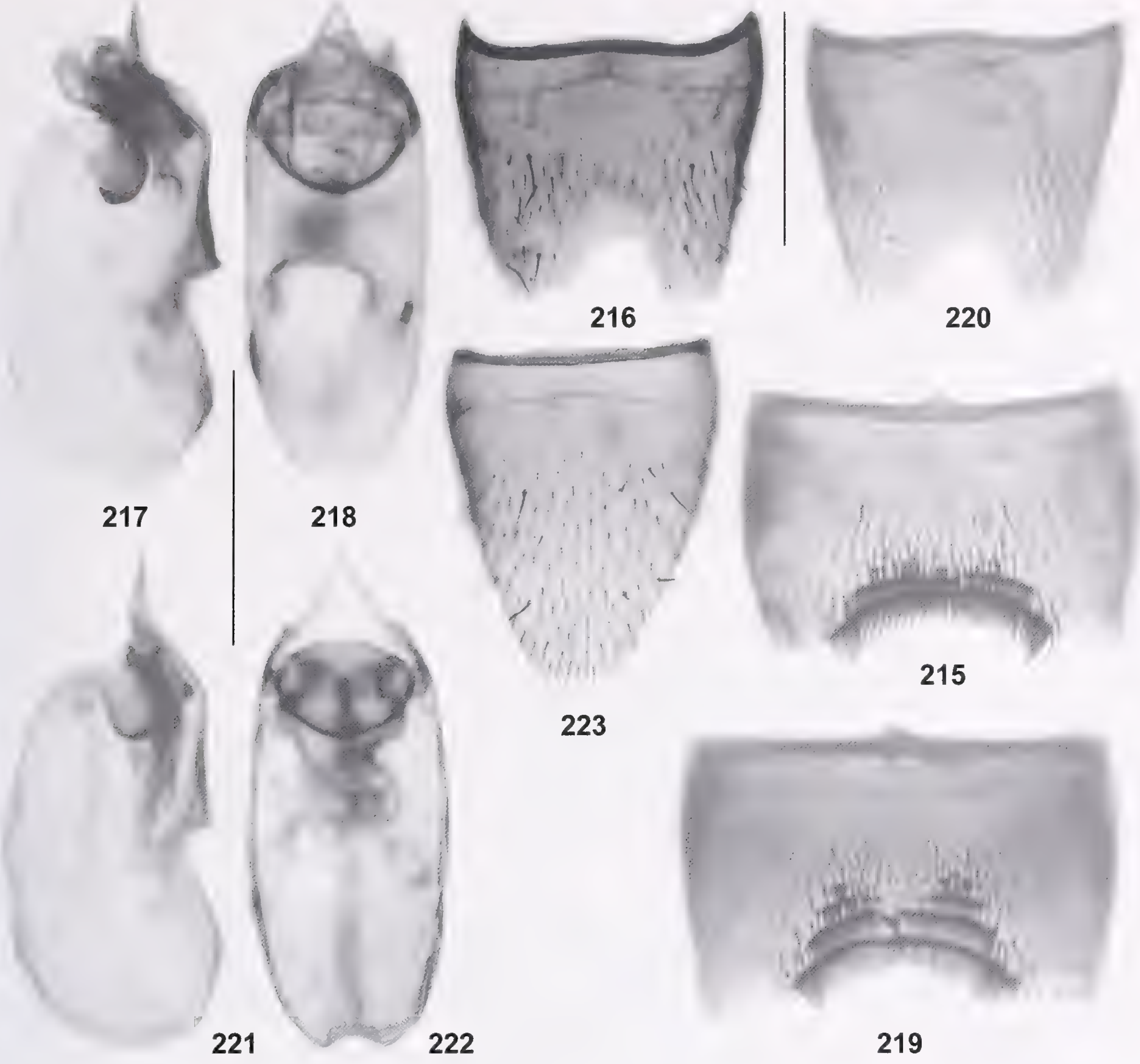
Abdomen broader than elytra; punctation distinct and dense; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; metatibia conspicuously flattened; posterior margin of tergite VIII convex in the middle; sternite VII posteriorly impressed and with two transverse rows each composed of numerous palisade setae, anterior to these rows with additional long black setae, posterior margin distinctly concave (Fig. 215); sternite VIII in the middle impressed and with very sparse pubescence, posterior margin with rather deep and asymmetric excision (Fig. 216); aedeagus 0.85 mm long, with symmetric ventral process of roughly triangular shape and with lamellate dorsal plate (Figs 217–218).

♀: protarsomeres I–IV dilated, but somewhat less so than in male; metatibia noticeably flattened in apical half; tergite VIII with convex posterior margin; sternite VIII oblong, slightly longer than tergite VIII, and convexly produced posteriorly; tergite X slightly longer than tergite IX in the middle.

Comparative notes. *Lathrobium pectinatum* is readily distinguished from other small-sized and subanophthalmous Himalayan *Lathrobium* species particularly by the modifications of the male sternites VII and VIII, as well as by the morphology of the aedeagus. Females are separated from those of the syntopic *L. cavicrus* by the less strongly flattened metatibiae and by the posteriorly less broadly produced sternite VIII.

Distribution and natural history. The species is known from four localities in the Manaslu Himal, in central Nepal (Fig. 214). It has been collected at altitudes of 2800-3500 m, in two localities together with the similar and closely related *L. cavicrus*.



Figs 215–223. *Lathrobium pectinatum* (**215–218**) and *L. compressicrus* (**219–223**). **215, 219:** male sternite VII; **216, 220:** male sternite VIII; **217, 221:** aedeagus in lateral view; **218, 222:** aedeagus in ventral view; **223:** female sternite VIII. Scale bars: 0.5 mm.

***Lathrobium compressicrus* sp. n.** (Figs 214, 219–223, 273)

Type material. Holotype ♂: “C-Nepal, Manaslu massif, Barapokhari Lekh, 23 km NE Besisahar Vill., 28°21’N, 84°33’E, 14.IX.2000, leg. A. Hetzel / 3800-4100 m, sieved from moss and Rhododendron leaf litter / Holotypus ♂ *Lathrobium compressicrus* sp. n. det. V. Assing 2011” (cAss). Paratypes: 2♂♂, 4♀♀: same data as holotype (cFel, cAss).

Description. Body length 5.0–6.2 mm; length of forebody 2.1–2.6 mm; males on average larger than females. Eyes composed of fewer than ten ommatidia.

Apical half of mesotibiae and all of metatibiae strongly flattened in both sexes. Other external characters highly similar to those of *L. barbatum* (see the following section).

♂: protarsomeres I–IV moderately dilated; posterior margin of tergite VIII convex; sternite VII strongly transverse and with concave posterior margin, in posterior median portion with four conspicuous transverse rows of pectinate setae, the two anterior rows interrupted in the middle and shorter than the two posterior rows (Fig. 219); sternite VIII with relatively broad and deep posterior excision (Fig. 220); aedeagus stout and approximately 0.9 mm long, ventral process subapically strongly narrowed and apically acute in ventral view (Figs 221–222).

♀: protarsomeres I–IV slightly less dilated than in male; posterior margin of tergite VIII strongly convex in the middle (Fig. 273); sternite VIII strongly narrowed posteriad (Fig. 223); tergite IX not divided in the middle; tergite X distinctly longer than tergite IX in the middle.

Comparative notes. *Lathrobium compressicrus* is evidently most closely related to the geographically close *L. pectinatum*, as is suggested by the similarly derived morphology of the metatibiae, the similar morphology of the aedeagus, and the similar modifications of the male sternites VII and VIII, but distinguished from this species by the flattened apical half of the mesotibia, the chaetotaxy of the male sternite VII, and the broader and slightly longer ventral process of the aedeagus.

Etymology. The specific epithet is a noun in apposition composed of the Latin adjective compressus and the Latin noun crus (shin); it refers to the conspicuous shape of the meso- and metatibiae.

Distribution and natural history. As can be inferred from the restricted distributions of other *Lathrobium* species in the Himalaya, as well as from the adaptive reductions of the pigmentation, the eyes, and the wings, the species is probably endemic to the Manaslu range, where it was found in the Barapokhari Lekh (Fig. 214). The type specimens were sifted from moss and rhododendron litter at an altitude of 3800–4100 m.

Lathrobium barbatum sp. n. (Figs 214, 224–231)

Type material. Holotype ♂: "Nepal, Annapurna Mts., above Temang, 3000–3500 m, 28°30'44N, 83°18'37E, 06.V.2007, leg. J. Schmidt / Holotypus ♂ *Lathrobium barbatum* sp. n. det. V. Assing 2011" (NME). Paratypes: 1♂, 2♀♀: same data as holotype (NME, cAss).

Description. Body length 4.8–5.5 mm; length of forebody 2.3–2.5 mm. Coloration: body uniformly reddish.

Head (Fig. 224) weakly oblong; punctation coarse and rather sparse; interstices with distinct microreticulation, broader than diameter of punctures in median dorsal portion, on average at least as broad as diameter of punctures in lateral and posterior dorsal portions. Eyes not projecting from lateral contours of head, very small, composed of approximately ten ommatidia.

Pronotum (Fig. 224) approximately 1.25 times as long as broad and as broad as head; punctation similar to that of head, but slightly less coarse; interstices without microsculpture.

Elytra short, 0.55–0.60 times as long as pronotum (Fig. 224); humeral angles weakly marked; punctation shallow and mostly ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Mesotibia abruptly dilated in basal half; metatibia modified and with conspicuous sexual dimorphism.

Abdomen broader than elytra; punctation distinct and dense; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; mesotibia dilated in basal third; metatibia in basal third with pronounced toothlike projection and in apical two thirds with pronounced concavity (Fig. 225); posterior margin of tergite VIII convex; sternite VII posteriorly impressed and with three transverse rows each composed of numerous palisade setae (Fig. 226); sternite VIII in the middle impressed and with very sparse pubescence, posterior margin with rather deep and asymmetric excision (Fig. 227); aedeagus approximately 0.9 mm long, with asymmetric ventral process and with lamellate dorsal plate (Figs 228–229).

♀: protarsomeres I–IV dilated, but less so than in male; modifications of metatibia much less pronounced than in male (Fig. 230); posterior margin of tergite VIII weakly convex; sternite VIII barely longer than broad, posterior margin obtusely and almost triangularly produced (Fig. 231); tergite IX undivided; tergite X slightly longer than tergite IX in the middle.

Comparative notes. *Lathrobium barbatum* is readily distinguished from other species of the *L. pectinatum* group by the modifications of the sexually dimorphic metatibiae, the conspicuous chaetotaxy of the male sternite VII, the asymmetric posterior excision of the male sternite VIII, as well as by the asymmetric aedeagus.

Etymology. The specific epithet (adjective: bearded) alludes to the conspicuous chaetotaxy of the male sternite VII.

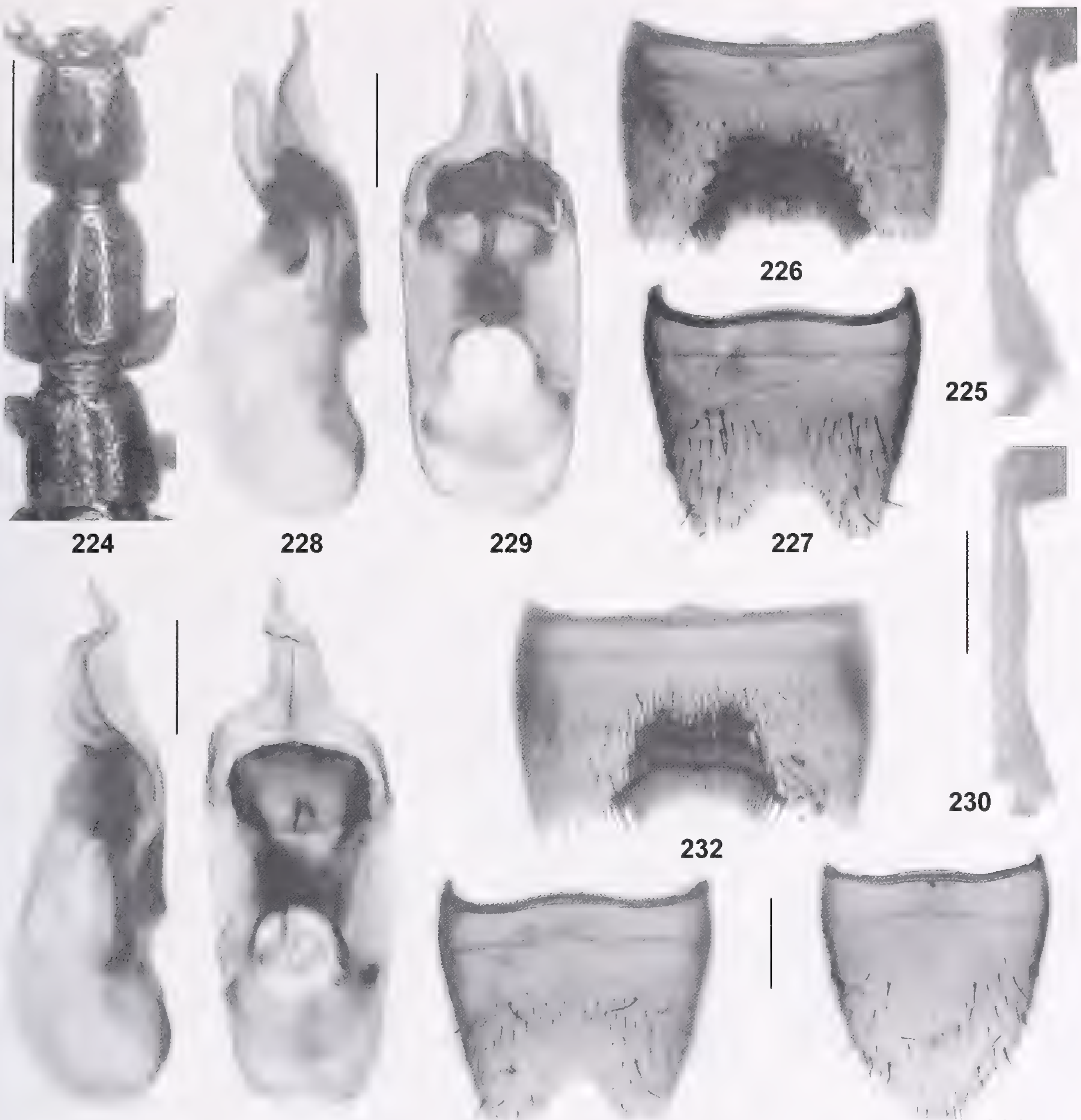
Distribution and natural history. The type locality is situated near Temang [28°32'N, 84°19'E] in the northern slopes of the Annapurna range (Fig. 214) at an altitude of 3000–3500 m.

Lathrobium barbulatum sp. n. (Figs 214, 232–235)

Type material. Holotype ♂: "Nepal Manang Distr., 4 km SE Pisang 3050 m 26.IX.83 Smetana & Löbl / Holotypus ♂ *Lathrobium barbulatum* sp. n. det. V. Assing 2011" (MHNG).

Description. Body length 5.2 mm; length of forebody 2.4 mm. External characters as in *L. barbatum*, distinguished only by the male sexual characters:

♂: protarsomeres I–IV strongly dilated; modifications of meso- and metatibia as in *L. barbatum*; posterior mar-



Figs 224–235. *Lathrobium barbatum* (**224–231**) and *L. barbatulum* (**232–235**). **224:** forebody; **225:** male metatibia; **226, 232:** male sternite VII; **227, 233:** male sternite VIII; **228, 234:** aedeagus in lateral view; **229, 235:** aedeagus in ventral view; **230:** female metatibia; **231:** female sternite VIII. Scale bars: 224: 1.0 mm; 225–235: 0.2 mm.

gin of tergite VIII convex; sternite VII posteriorly impressed and with three transverse rows each composed of numerous palisade setae (Fig. 232); sternite VIII in the middle impressed and with very sparse pubescence, posterior margin with rather deep and weakly asymmetric excision (Fig. 233); aedeagus approximately 0.95 mm long, with asymmetric ventral process and with lamellate dorsal plate (Figs 234–235).

♀: unknown.

Comparative notes. *Lathrobium barbulatum* is distinguished from the highly similar and undoubtedly closely related *L. barbatum* by the shape of the apical row of palisade setae of the male sternite VII, the less strongly asymmetric posterior excision of the male sternite VIII, and by the morphology of the aedeagus (shape of the apex of the ventral process, transversely rectangular dorsal plate). From other species of the *L. pectinatum* group, it is readily distinguished also by the modifications of the male meso- and metatibiae.

Etymology. The specific epithet (Latin, adjective derived from barbula: small beard) alludes to the conspicuous chaetotaxy of the male sternite VII and to the close relationship with *L. barbatum*.

Distribution and natural history. The type locality is situated near Pisang [28°38'N, 84°06'E] in the northern slopes of the Annapurna range (Fig. 214), not far from the type locality of *L. barbatum*, at an altitude of 3050 m.

Lathrobium cavicrus sp. n. (Figs 214, 282–289)

Type material. Holotype ♂: "Nepal Manaslu Mts., SW Merne Pokhari, 3200-3300 m, leg. Schmidt, 11.V.2005 / 28°21'41N 84°30'42E, Quellgebiet, mittl. Nebenfluß des Ngadi Khola / Holotypus ♂ *Lathrobium cavicrus* sp. n. det. V. Assing 2012" (NME). Paratypes: 7♂♂, 11♀♀: same data as holotype (NME, cAss); 7♀♀: "Nepal Manaslu Mts., 28°21'36N 84°30'04E, E slope of Ngali Khola Vall., 2800-3000 m, leg. Schmidt, 13.V.2005" (NME).

Description. Body length 5.0–6.0 mm; length of forebody 2.3–2.6 mm. Forebody as in Fig. 282.

Externally highly similar to the syntopic *L. pectinatum*; reliably distinguished only by the primary and secondary sexual characters.

♂: protarsomeres I–IV strongly dilated; metafemur enlarged, but without posterior tooth; metatibia with ventral tooth-like projection in basal third and and in apical two thirds with pronounced concavity (Fig. 283); posterior margin of tergite VIII weakly convex; sternite VII strongly transverse and with weakly concave posterior margin, in posterior median portion with four conspicuous, transverse, almost straight, and uninterrupted rows of pectinate setae (Fig. 284); sternite VIII with relatively broad, moderately deep, and somewhat asymmetric posterior excision (Fig. 285); aedeagus stout and 0.90–0.95 mm long, ventral process subapically strongly narrowed, apically acute, and almost symmetric in ventral view (Figs 286–287).

♀: protarsomeres I–IV dilated, but somewhat less so than in male; posterior margin of tergite VIII convexly pointed in the middle (Fig. 288); sternite VIII oblong and convexly produced posteriorly (Fig. 289); tergite IX not divided in the middle; tergite X distinctly longer than tergite IX in the middle.

Comparative notes. As can be inferred from the similarly derived modifications of the male metatibiae and of the male sternites VII and VIII, as well as from the similar general morphology of the aedeagus, *L. cavicrus* is most closely related to *L. barbatus* and *L. barbatulus* from the Annapurna range. It is distinguished from them by the less distinctly concave posterior margin and the almost straight transverse rows of pectinate setae of the male sternite VII, as well as by the differently shaped, almost symmetric ventral process of the aedeagus. From the syntopic and externally similar *L. pectinatum*, *L. cavicrus* is distinguished by the male primary and secondary sexual characters, by the more strongly flattened female metatibiae, as well as by the posteriorly more broadly produced female sternite VIII.

Etymology. The specific epithet is a noun in apposition composed of the Latin adjective cavus (excavate) and the Latin noun crus (shin); it refers to the conspicuous shape of the male metatibiae.

Distribution and natural history. This species is known only from two adjacent localities in the Manaslu range in central Nepal (Fig. 214), where it was collected at altitudes of 2800-3300 m, together with numerous specimens of *L. pectinatum*.

Lathrobium franzi Coiffait, 1975 (Figs 214, 236–241)

Lathrobium franzi Coiffait, 1975: 185.

Type material examined. Holotype ♂: "Zentral-Nepal, Sept.–Okt. 1971, lg. H. Franz / Wald unterhalb Fulung / Pa 174 [overleaf] / Holotype / Lathrobium franzi H. Coiffait 1974 / Lathrobium franzi Coiffait, det. V. Assing 2011" (NHMW). Paratypes: see type material of *L. spiculatum*.

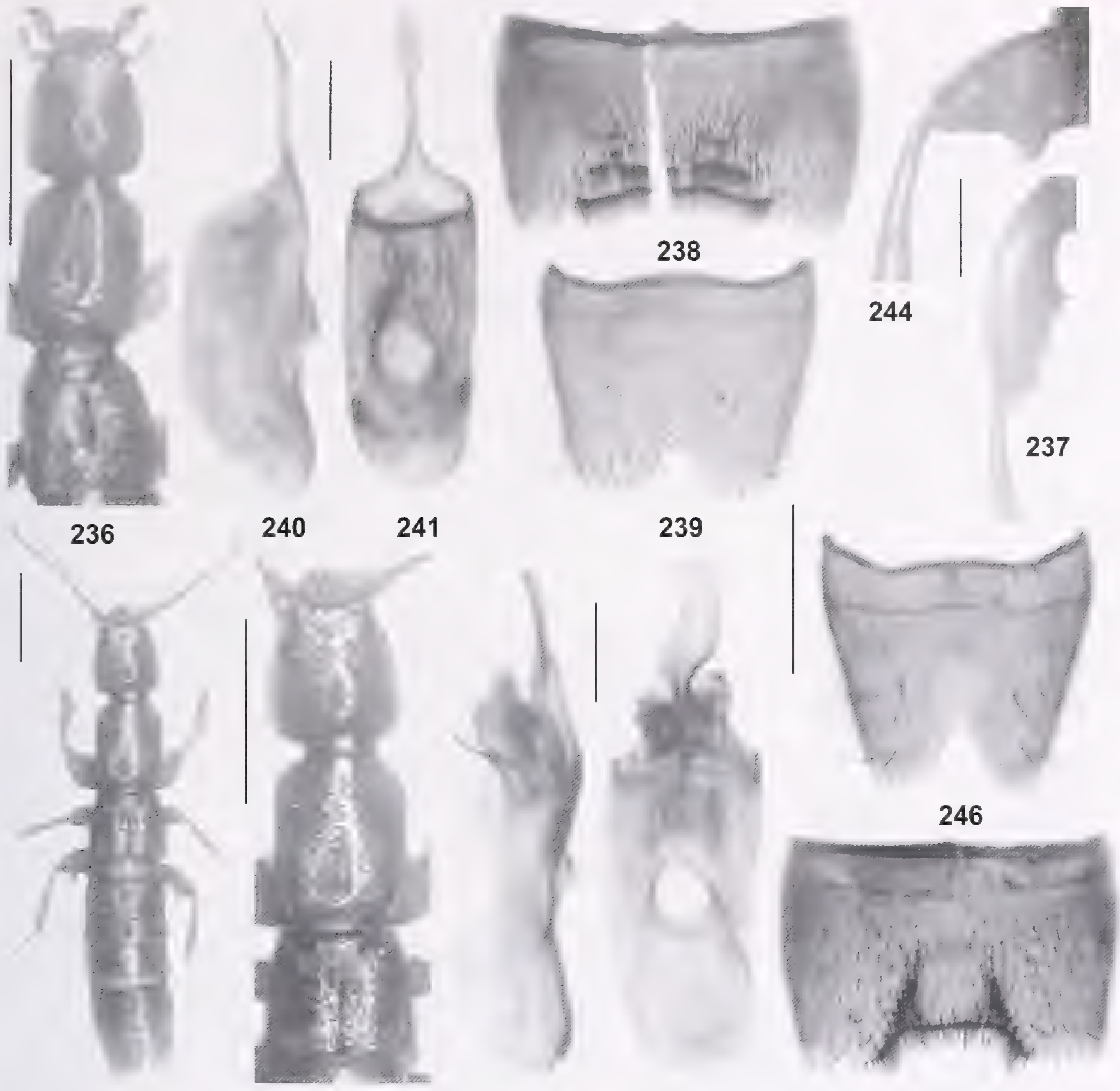
Comment. The original description is based on a male holotype from "Fulung, Népal central", one female paratype from "chemin entre Gosatkunde et le monastère de Fulung", and three female paratypes from "entre Mulkarka [sic] et Tare Pati" (Coiffait 1975). Two examined female paratypes from between Mulkharka and Thare Pati are not conspecific with the holotype; they refer to *L. spiculatum* (see below).

Redescription. Moderately small species, body length 5.7 mm; length of forebody 2.5 mm. Coloration: body uniformly yellowish-red.

Head (Fig. 236) distinctly oblong, approximately 1.1 times as long as broad; punctation coarse and moderately dense; interstices with distinct microreticulation, broader than diameter of punctures in median dorsal portion, on average at least as broad as diameter of punctures in lateral and posterior dorsal portions. Eyes not projecting from lateral contours of head, very small, composed of approximately 10 ommatidia.

Pronotum (Fig. 236) 1.25 times as long as broad and as broad as head; punctation similar to that of head, but slightly less coarse; interstices without microsculpture.

Elytra short, 0.55 times as long as pronotum (Fig. 236); humeral angles weakly marked; punctation shallow and



Figs 236–248. *Lathrobium franzi* (**236–241**) and *L. calcaratum* (**242–248**). **236, 243:** forebody; **237, 244:** male metafemur; **238, 245:** male sternite VII; **239, 246:** male sternite VIII; **240, 247:** aedeagus in lateral view; **241, 248:** aedeagus in ventral view; **242:** habitus. Scale bars: 236, 242–243: 1.0 mm; 238–239, 245–246: 0.5 mm; 237, 240–241, 244, 247–248: 0.2 mm.

ill-defined; interstices without distinct microsculpture. Hind wings completely reduced.

Abdomen broader than elytra; punctation moderately fine and dense; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; metafemur with distinct ventral tooth in the middle (Fig. 237); metatibia slightly sinuate and strongly dilated apically; sternite VII strongly transverse, posteriorly extensively impressed in the middle and with three transverse rows each composed of numerous palisade setae, posterior margin weakly concave (Fig. 238); sternite VIII moderately transverse, posteriorly with long median impression, with sparse, unmodified pubescence, and with weakly asymmetric, moderately deep posterior excision (Fig. 239); aedeagus 1.0 mm long and of highly distinctive morphology; basal portion large, ventral process long, slender, and apically spear-shaped (Figs 240–241).

♀: not examined.

Comparative notes. This species is distinguished from other microphthalmous and depigmented representatives of the genus particularly by the modifications of the metafemur and metatibia, by the conspicuous chaetotaxy of the male sternite VII, as well as by the conspicuous shape of the aedeagus.

Distribution and natural history. The type locality is situated near the Fulung Monastery, to the northwest of the Gosainkund lakes, to the north-northwest of Kathmandu, in central Nepal (Fig. 214). *Lathrobium ignoratum* was collected in the same locality. According to Franz´ diary, the holotype was collected by sifting forest and rhododendron litter on 11.X.1971.

***Lathrobium calcaratum* sp. n.** (Figs 214, 242–248)

Type material. Holotype ♂: "Kali-Gandaki-Tal, zw. Ghasa u. Lete / Pa 138 [overleaf] / Holotypus ♂ *Lathrobium calcaratum* sp. n., det. V. Assing 2011" (NHMW).

Description. Body length 5.7 mm; length of forebody 2.85 mm. Habitus as in Fig. 242. Coloration: body uniformly reddish.

Head (Fig. 243) weakly oblong, 1.04 times as long as broad; punctation coarse and rather sparse, even sparser in median dorsal portion; interstices with distinct, but shallow microreticulation, somewhat glossy, much broader than diameter of punctures in median dorsal portion, on average at least as broad as diameter of punctures in lateral and posterior dorsal portions. Eyes not projecting from lateral contours of head, very small, composed of approximately ten ommatidia.

Pronotum (Fig. 243) 1.25 times as long as broad and as broad as head; punctation similar to that of head; interstices without microsculpture.

Elytra short, 0.57 times as long as pronotum (Fig. 243); humeral angles weakly marked; punctation shallow, sparse, and fine; interstices without distinct microsculpture, much broader than diameter of punctures. Hind wings completely reduced. Metafemur with conspicuous sexual dimorphism.

Abdomen broader than elytra; punctation distinct, moderately fine, and dense; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; metafemur with pronounced, apically rounded ventral tooth in the middle (Fig. 244); metatibia in apical two thirds somewhat dilated; sternite VII distinctly transverse, with pronounced median impression of triangular shape, this impression laterally delimited by a fringe of conspicuously dense pectinate setae, posterior margin in the middle with rather broad and not very deep excavation of trapezoid shape, anterior margin of this excavation with transverse row of numerous pectinate setae (Fig. 245); sternite VIII with distinct median impression without pubescence, posterior excision relatively deep and V-shaped (Fig. 246); aedeagus 1.1 mm long, ventral process strongly asymmetric and of highly distinctive shape (Figs 247–248).

♀: unknown.

Comparative notes. As can be inferred from the shape and chaetotaxy of the male sternites VII and VIII, as well as from the similar general morphology of the aedeagus, *L. calcaratum* belongs to the *L. pectinatum* group. The similarly derived modifications (presence of a pronounced ventral tooth in the middle) of the male metafemur, a unique character among Himalayan representatives of the genus, suggests that *L. calcaratum* is most closely related to *L. franzi*. It is additionally separated from all its congeners particularly by the conspicuous shape and chaetotaxy of the male sternite VII, as well as by the shape of the strongly asymmetric ventral process of the aedeagus.

Etymology. The specific epithet (Latin, adjective: with spurs) alludes to the tooth-like ventral projections of the male metafemora.

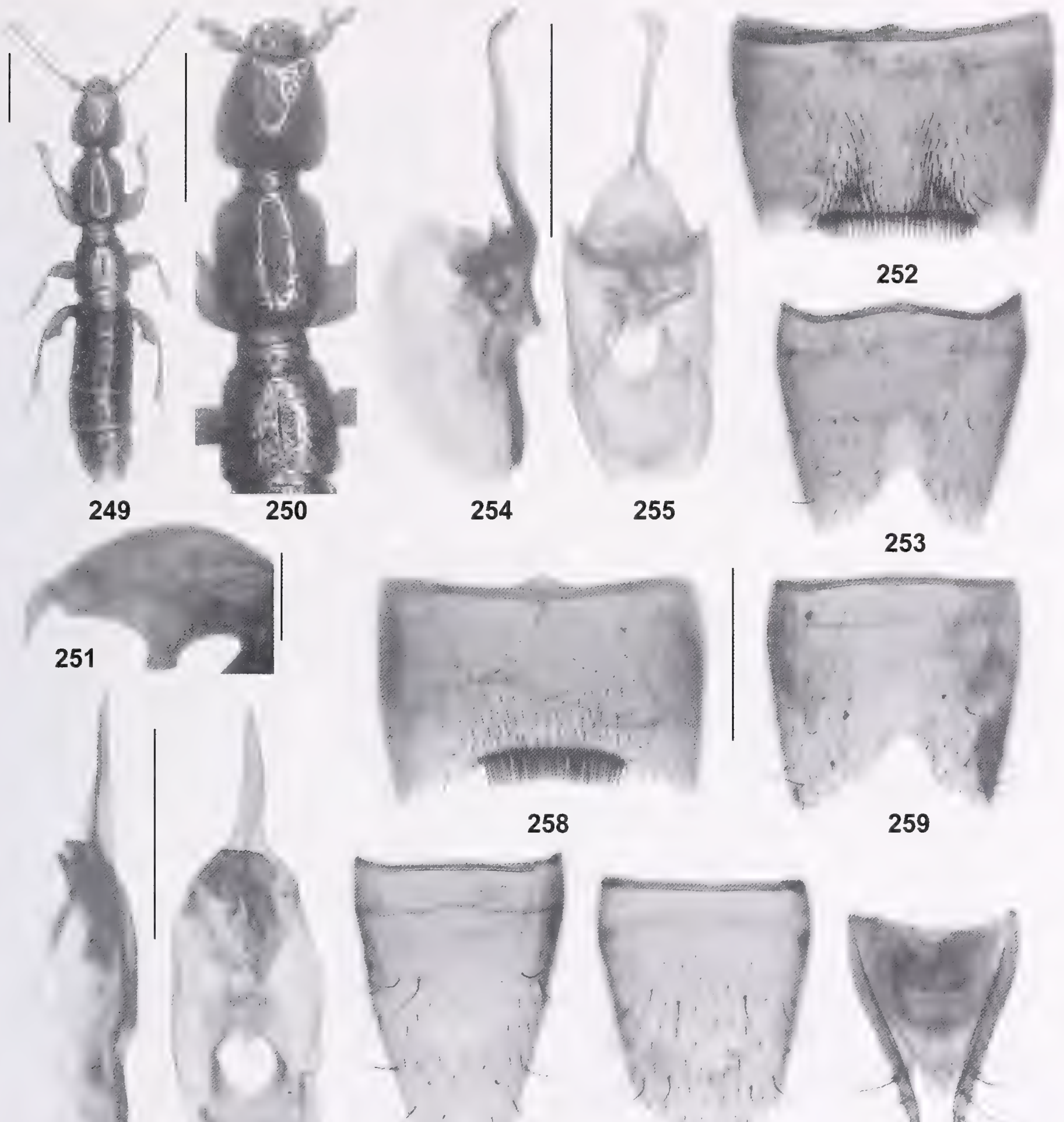
Distribution and natural history. The type locality is situated in the Kali-Gandaki valley, the valley separating the Dhaulagiri and Annapurna ranges, between Lete and Ghasa [approximately 28°37'N, 83°38'E] in central Nepal (Fig. 214). According to Franz´ diary, the holotype was collected in a stand of alder, in the vicinity of a rhododendron forest, on 26.IX.1971.

***Lathrobium privum* sp. n.** (Figs 214, 249–257)

Type material. Holotype ♂: "581 Nepal: Jumla Distr., Khali-Lagna pass, 3500 m, 16.–17.VI.1998, leg. W. Schawaller / Holotypus ♂ *Lathrobium privum* sp. n., det. V. Assing 2011" (SMNS). Paratypes: 1♀: same data as holotype (cAss).

Description. Body length 5.8–6.2 mm; length of forebody 2.7–3.1 mm. Habitus and forebody as in Figs 249–250. Coloration: body uniformly reddish. Posterior margin of abdominal tergite VIII distinctly convexly produced in the middle. Other external characters as in *L. calcaratum*.

♂: protarsomeres I–IV strongly dilated; metafemur strongly dilated in the midde and with pronounced, apically broadly truncate ventral tooth in the middle (Fig. 251); metatibia somewhat compressed, gradually dilated apically; sternite VII distinctly transverse, with shallow median impression, on either side of this impression with a cluster of dense dark setae posteriorly, posterior margin weakly concave and with transverse row of approximate-



Figs 249–262. *Lathrobium privum* (**249–257**) and *L. cassagnaui* (**258–262**). **249:** habitus; **250:** forebody; **251:** male metafemur; **252, 258:** male sternite VII; **253, 259:** male sternite VIII; **254, 260:** aedeagus in lateral view; **255, 261:** aedeagus in ventral view; **256, 262:** female sternite VIII; **257:** female abdominal segments IX and X in dorsal view. Scale bars: 249–250: 1.0 mm; 252–262: 0.5 mm; 251: 0.2 mm.

ly 30 pectinate setae (Fig. 252); sternite VIII with distinct median impression without pubescence posteriorly, posterior excision relatively deep and somewhat asymmetric (Fig. 253); aedeagus 1.15 mm long, ventral process long and thin, somewhat shaped like a golf club (Figs 254–255).

♀: protarsomeres distinctly dilated, but less so than in male; sternite VIII much longer than broad and longer than tergite VIII, distinctly tapering posteriad (Fig. 256); tergite IX undivided anteriorly; tergite X reduced, apparently absent (Fig. 257).

Comparative notes. As can be inferred from the shape and chaetotaxy of the male sternites VII and VIII, as well as from the similar general morphology of the aedeagus, *L. privum* belongs to the *L. pectinatum* group. The similarly derived modifications (presence of a pronounced ventral tooth in the middle) of the male metafemur suggests that *L. privum* is most closely related to *L. franzi* and *L. calcaratum*. It is distinguished from these species particularly by the strongly dilated male metafemur, the shape of the tooth on the male metafemur, by the modifications of the male sternites VII and VIII, as well as by the shape of the ventral process of the aedeagus, which somewhat resembles a golf club.

Etymology. The specific epithet (Latin, adjective: free of) alludes to the reduced female tergite X.

Distribution and natural history. The type locality is situated in Jumla district, western Nepal (Fig. 214), at an altitude of 3500 m.

***Lathrobium cassagnaui* Coiffait, 1982** (Figs 214, 258–262)

Lathrobium cassagnaui Coiffait, 1982b: 287 ff.

Type material examined. Holotype ♂: "Nepal X.81, Kalingchok, 3000 m PC / Holotype / Lathrobium cassagnaui H. Coiffait 1982 / Lathrobium cassagnaui Coiffait, det. V. Assing 2011" (MNHNP).

Comment. The original description is based on a unique male holotype from "Népal, Massif du Kalingchok, près de Barbabise [sic]" (Coiffait 1982b).

Additional material examined. Nepal: 1♀, Dolakha district, SW Kalinchok, 3100 m, 19.–23.IV.1995, leg. Martens & Schawaller (SMNS).

Redescription. Moderately small species, body length 4.8–5.3 mm; length of forebody 2.2–2.3 mm. Coloration: body uniformly yellowish-red.

Head oblong, almost 1.1 times as long as broad; punctation coarse and rather sparse, even sparser in median dorsal portion; interstices with distinct microreticulation, broader than diameter of punctures. Eyes not projecting from lateral contours of head, very small, composed of approximately eight ommatidia.

Pronotum 1.28 times as long as broad and as broad as head; punctation similar to that of head, but slightly denser; interstices without microsculpture, except for some shallow traces in posterior half.

Elytra short, 0.58 times as long as pronotum; humeral angles weakly marked; punctation shallow and ill-defined; interstices without distinct microsculpture. Hind wings completely reduced.

Abdomen broader than elytra; punctation moderately fine and dense; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; hind legs without modifications, except for the slightly compressed metatibia; sternite VII strongly transverse, with shallow median impression posteriorly, posterior margin broadly and weakly concave, in the middle with one transverse row of numerous palisade setae (Fig. 258); sternite VIII weakly transverse, posteriorly with shallow median impression without pubescence, posterior excision rather deep and somewhat asymmetric (Fig. 259); aedeagus rather large in relation to body size, 1.2 mm long, ventral process straight, long, and spine-shaped (Figs 260–261).

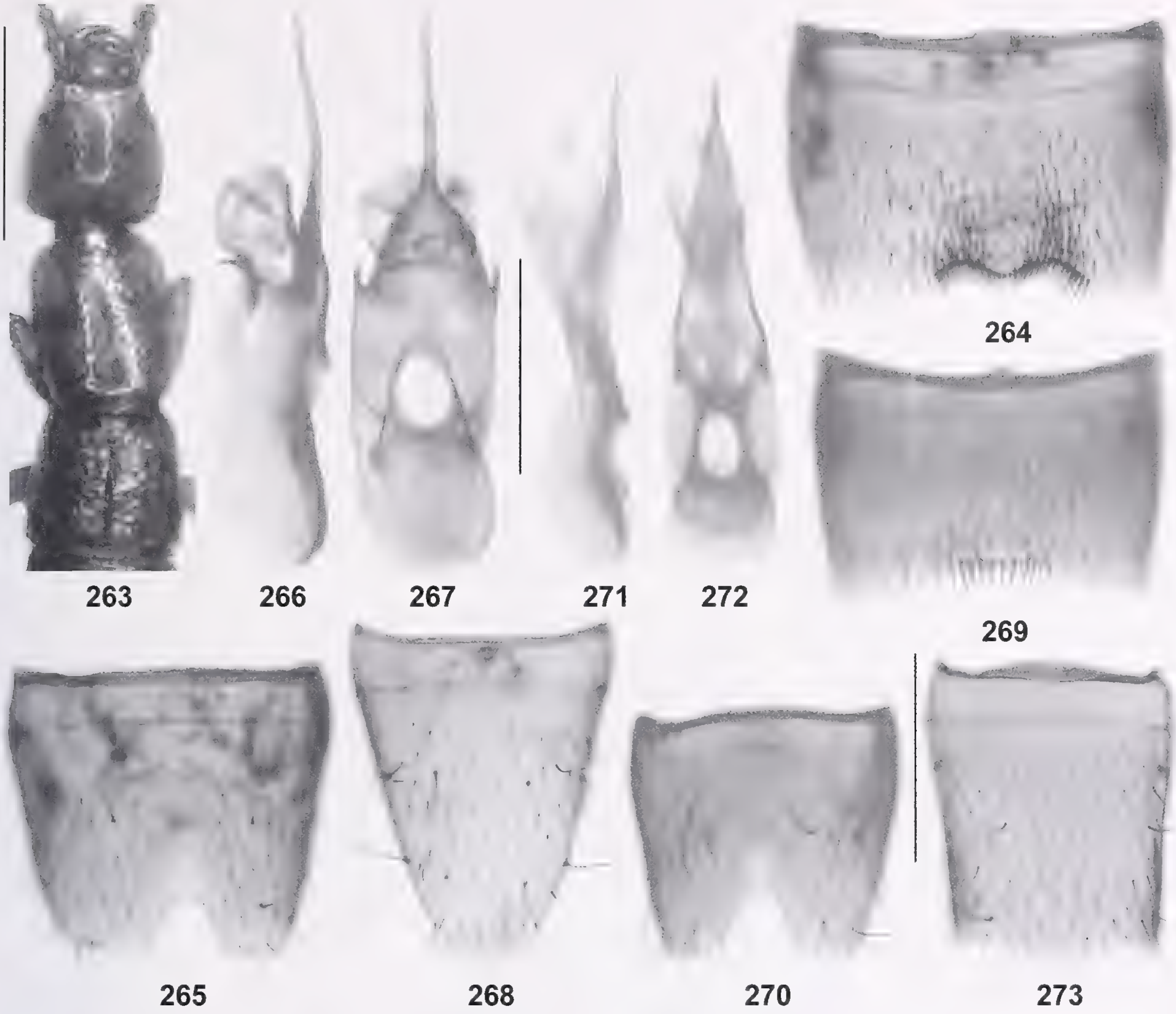
♀: protarsomeres I–IV moderately dilated; posterior margin of tergite VIII very obtusely angled in the middle; sternite VIII weakly oblong and with broadly convex posterior margin (Fig. 262); tergite IX not divided in the middle; tergite X slightly longer than tergite IX in the middle.

Comparative notes. This species is distinguished from other representatives of the *L. pectinatum* group particularly by the modifications of the male sternite VII and by the distinctive shape of the aedeagus.

Distribution and natural history. The species is currently known only from the type locality, the Kalinchok, a mountain some 13 km to the east of Barahbise and almost 70 km to east-northeast of Kathmandu in central Nepal (Fig. 214). Apart from the altitude (3000 m), bionomic data are not available.

***Lathrobium fodens* sp. n.** (Figs 214, 263–268)

Type material. Holotype ♂: "Nepal, Prov. Karnali, D: Jumla, Churta, E Jagdula valley, 3800–4100 m NN, 03.VI.2007 / 29°09'49N, 82°31'09E, alpine mats, leg. M. Hartmann / Holotypus ♂ *Lathrobium fodens* sp. n., det. V. Assing 2011" (NME). Paratypes: 1♂: same data as holotype (cAss); 1♂, 4♀♀: "Nepal, P: Karnali, D: Jumla, Churta, E below Mori La, 3550–3800 m NN, 01.VI.2007 / 29°09'58"N, 82°29'12"E, leg. M. Hartmann, mixed pine forest" (NME, cAss).



Figs 263–273. *Lathrobium fodens* (**263–268**), *L. attritum* (**269–272**), and *L. compressicrus* (**273**). **263:** forebody; **264, 269:** male sternite VII; **265, 270:** male sternite VIII; **266, 271:** aedeagus in lateral view; **267, 272:** aedeagus in ventral view; **268:** female sternite VIII; **273:** female tergite VIII. Scale bars: 263: 1.0 mm; 264–273: 0.5 mm.

Description. Body length 5–6 mm; length of forebody 2.4–2.7 mm. Coloration: body more or less uniformly reddish.

Head (Fig. 263) approximately as long as broad or weakly oblong; punctation coarse and rather sparse; interstices with distinct microreticulation, much broader than diameter of punctures in median dorsal portion. Eyes not projecting from lateral contours of head, very small, composed of fewer than 10 ommatidia.

Pronotum (Fig. 263) approximately 1.25 times as long as broad and as broad as head; punctation similar to that of head; midline broadly impunctate; interstices without microsculpture.

Elytra short, approximately 0.6 times as long as pronotum (Fig. 263); humeral angles weakly marked; punctation shallow and rather ill-defined; interstices without distinct microsculpture. Hind wings completely reduced. Metatibia slightly compressed.

Abdomen broader than elytra; punctation shallow and moderately dense; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV strongly dilated; posterior margin of tergite VIII truncate; sternite VII weakly impressed, posteriorly with a pair of clusters of blackish setae, posterior margin bisinuate in the middle and with fringe of numerous black palisade setae (Fig. 264); sternite VIII weakly transverse, median impression without setae, posterior excision somewhat U-shaped and in somewhat asymmetric position (Fig. 265); aedeagus 1.2–1.3 mm long; ventral process conspicuously long and thin; dorsal plate broad and lamellate (Figs 266–267).

♀: protarsomeres I–IV dilated, but somewhat less so than in male; posterior margin of tergite VIII weakly convex in the middle; sternite VIII oblong and convexly produced posteriorly (Fig. 268); tergite IX not divided in the middle; tergite X slightly longer than tergite IX in the middle.

Comparative notes. Among the species of the *L. pectinatum* group, *L. fodens* is particularly characterised by the conspicuously long and thin ventral process of the aedeagus, as well as by the shape and chaetotaxy of the male sternites VII and VIII.

Etymology. The specific epithet is the present participle of the Latin verb fodere (to sting) and refers to the conspicuous shape of the ventral process of the aedeagus.

Distribution and natural history. The species was collected in two localities in Karnali province, Jumla district, West Nepal (Fig. 214), at altitudes of 3550–4100 m.

***Lathrobium attritum* sp. n.** (Figs 214, 269–272)

Type material. Holotype ♂: "Nepal (Prov. Bagmati), Yardang ridge NE Barahbise, 3250 m, 5.V.81, Löbl & Smetana / Holotypus ♂ *Lathrobium attritum* sp. n., det. V. Assing 2012" (cAss).

Description. Body length 4.6 mm; length of forebody 2.2 mm. Coloration: body pale reddish. External characters as in *L. cassagnaui*.

♂: protarsomeres I-IV moderately dilated; hind legs without modifications; sternite VII rather strongly transverse, with shallow median impression posteriorly, posterior margin broadly and weakly conave, in the middle with one transverse row of approximately 8 stout, but not very dense palisade setae (Fig. 269); sternite VIII weakly transverse, posteriorly with shallow median impression without pubescence, posterior excision weakly asymmetric and rather deep (Fig. 270); aedeagus 1.15 mm long, slender, with long, acute, and in lateral view almost straight ventral process (Figs 271–272).

♀: unknown.

Comparative notes. Based on the modifications of the male sternite VIII and on the similar general morphology of the aedeagus, *L. attritum* is undoubtedly most closely related to the geographically close *L. cassagnaui*, from which it is distinguished particularly by the less numerous pectinate setae at the posterior margin of the male sternite VII, as well as as by the shape of the aedeagus.

Etymology. The specific epithet (Latin, adjective: rubbed off, worn out) refers to the relatively sparse pectinate setae at the posterior margin of the male sternite VIII.

Distribution and natural history. The type locality is situated in the Yardang ridge to the west of Barahbise, Bagmati province, central Nepal (Fig. 214). The holotype was collected at an altitude of 3250 m.

UNIDENTIFIED AND UNDESCRIBED SPECIES

***Lathrobium* sp. 1**

Material examined. Nepal: 1♀, Manaslu, Barapokhari Lekh, 23 km NE Besisahar, 28°21'N; 84°33'E, 3800–4100 m, sifted from moss and rhododendron litter, 14.IX.2000, leg. Hetzel (cAss).

Comment. The above female was collected in the same locality as the types of *L. compressicrus*. It is smaller than *L. compressicrus* and does not have flattened femora and tibiae.

***Lathrobium* sp. 2**

Material examined. Nepal: 2♀♀: "Kali-Gandaki-Tal, zw. Ghasa u. Lete / Pa 138 [overleaf]" (NHMW, cAss).

Comment. This species is characterised by conspicuously small body size (length of forebody: 1.7–1.8 mm; much smaller than the syntopic *L. calcaratum*), a uniformly pale-reddish body, and eyes composed of fewer than ten ommatidia.

***Lathrobium* sp. 3**

Material examined. Nepal: 1♀: "576 Nepal: Mugu Distr., SW Rara Lake, 3200 m, 12.VI.1998, leg. W. Schawaller " (SMNS).

Comment. This species is characterised by small body size (length of forebody: 2.9 mm), a uniformly pale-reddish body, and eyes composed of fewer than ten ommatidia.

***Lathrobium* sp. 4**

Material examined. Nepal: 1♀: "628 Nepal: Dolakha Distr., E Ting Sang La, 3100 m, 12.–13.VI.2000, leg. W. Schawaller " (SMNS).

Comment. This species is characterised by small body size (length of forebody: 2.2 mm), a uniformly pale-reddish body, and eyes composed of fewer than ten ommatidia.

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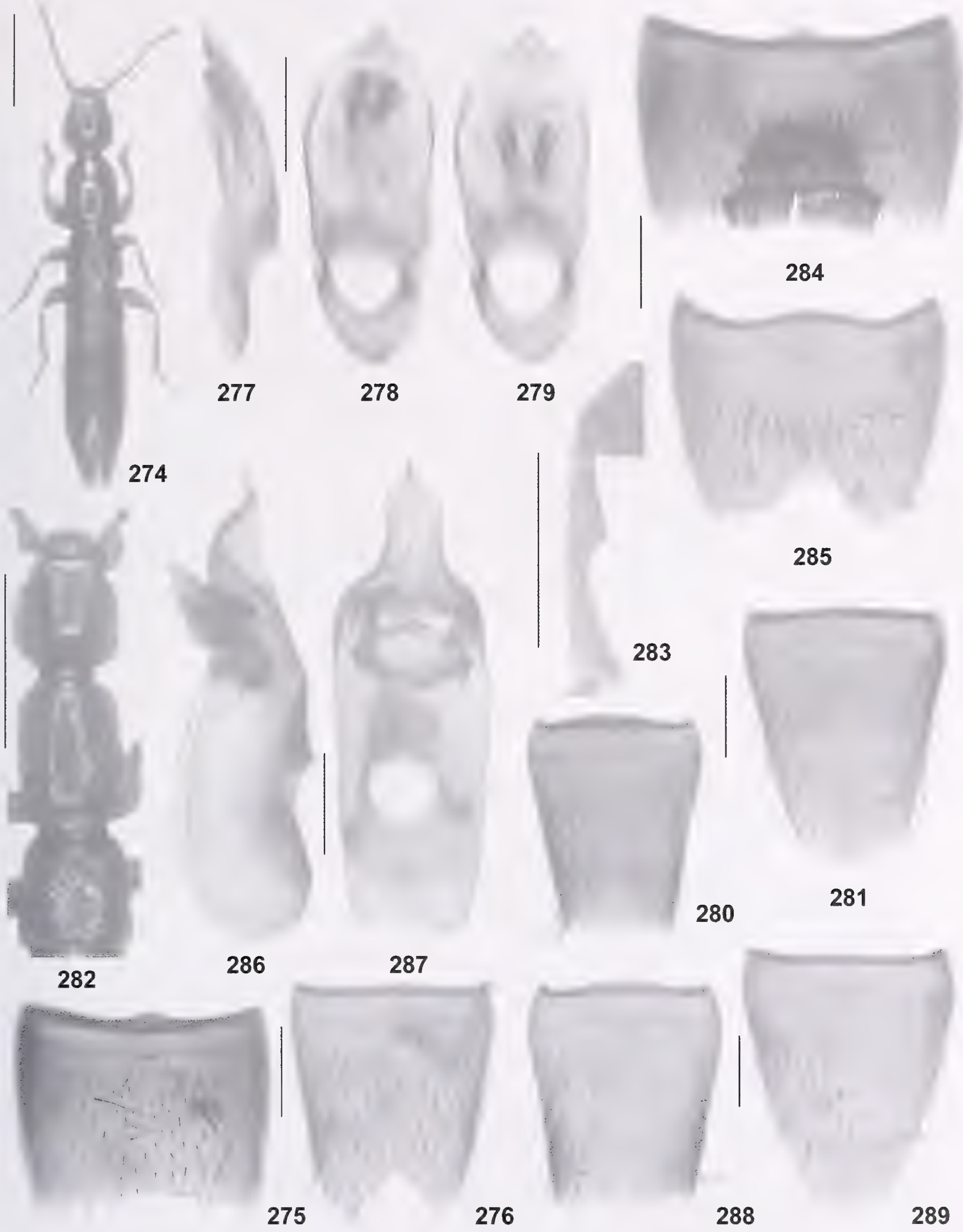
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Figs 274–289. *Lathrobium planissimum* (**274–281**) and *L. cavicrus* (**282–289**). **274:** habitus; **275, 284:** male sternite VII; **276, 285:** male sternite VIII; **277, 286:** aedeagus in lateral view; **278–279, 287:** aedeagus in ventral view; **280, 288:** female tergite VIII; **281, 289:** female sternite VIII; **283:** male metatibia. Scale bars: 274, 282: 1.0 mm; 283: 0.5 mm; 275–281, 284–289: 0.2 mm.

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Lathrobium sp. 5

Material examined. Nepal: 1♀: "215 Dhading Dist., Ankhu Khola Tal, Ankhu Sangi, 650 m, Kulturland, Waldreste, 24.–25. Jul 83 Martens & Schawaller " (SMNS).

Comment. This species is characterised by small body size (length of forebody: 2.5 mm) and small eyes composed of fewer than ten ommatidia. The teneral specimen has evidently been subject to post-mortem darkening.

Lathrobium sp. 6

Material examined. Nepal: 1♂ [teneral; dissected prior to present study; aedeagus damaged]: "282 Taplejung Dist. S. Gunsa, 3900–3600 m, Abies/Rhododend., 10 Sep 83 Martens & Daams l. " (SMNS).

Comment. This species is characterised by small body size (length of forebody: 2.9 mm) and moderately small eyes. The teneral specimen has evidently been subject to post-mortem darkening.

Lathrobium sp. 7

Material examined. Nepal: 2♀♀: "Nepal-Expeditionen Jochen Martens / 361 Taplejung Distr., upper Simbua Khola Valley, near Tseram, 3250–3350 m, mature Abies-Rhododendron forest, 10–15 May 88 J. Martens & W. Schawaller leg." (SMNS, cAss).

Comment. This species is belongs to the *L. discissum* group. It is distinguished from *L. discissum* by even larger size.

Lathrobium sp. 8

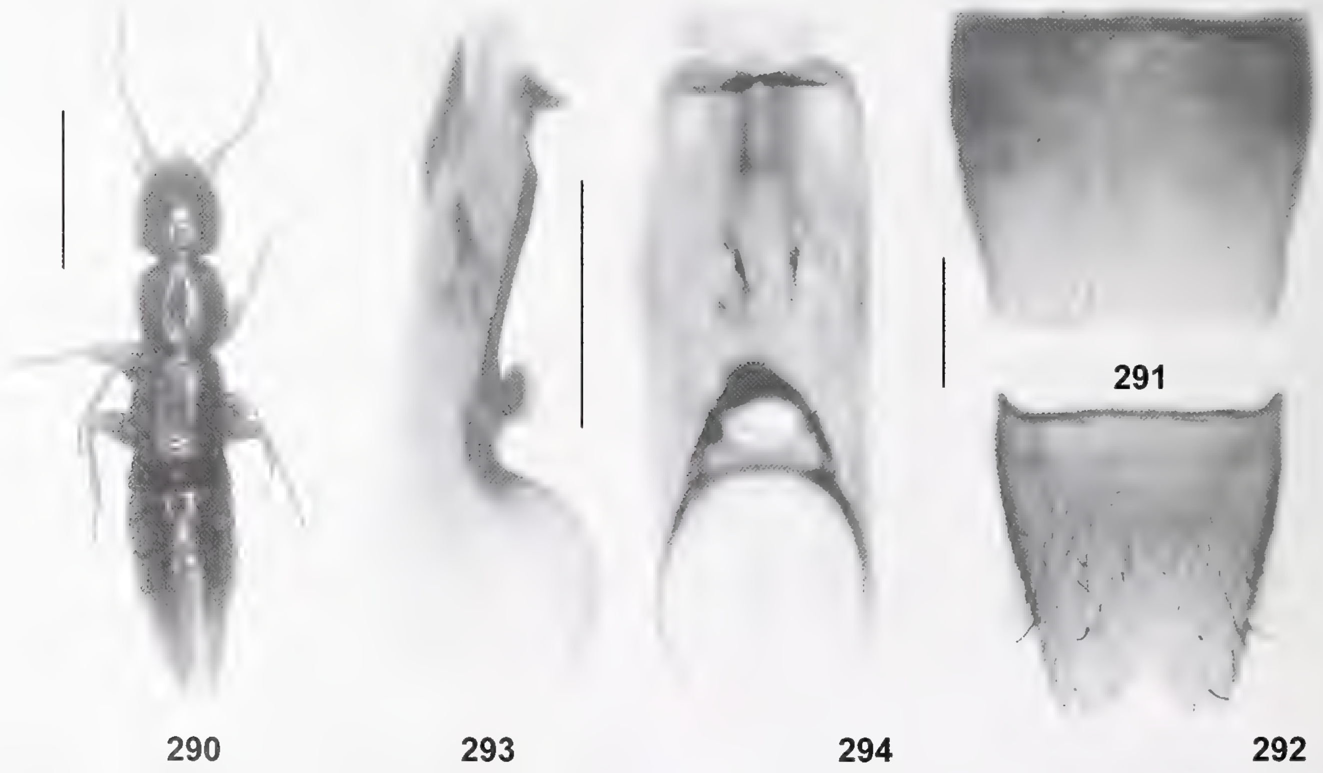
Material examined. Nepal: 2♀♀: "Nepal Khandbari Dis., Goru Dzure Dara, W slope 3600 m, 9.IV.84 Smetana & Löbl" (SMNS, cAss). 3♀♀: "Nepal (Prov. Bagmati), below Thare Pati, 3500 m, 12.IV.81, Löbl & Smetana" (MHNG, cAss).

Comment. This species belongs to the *L. nepalense* group. It is distinguished from most species of this group by its small size (length of forebody: 2.5–2.7 mm).

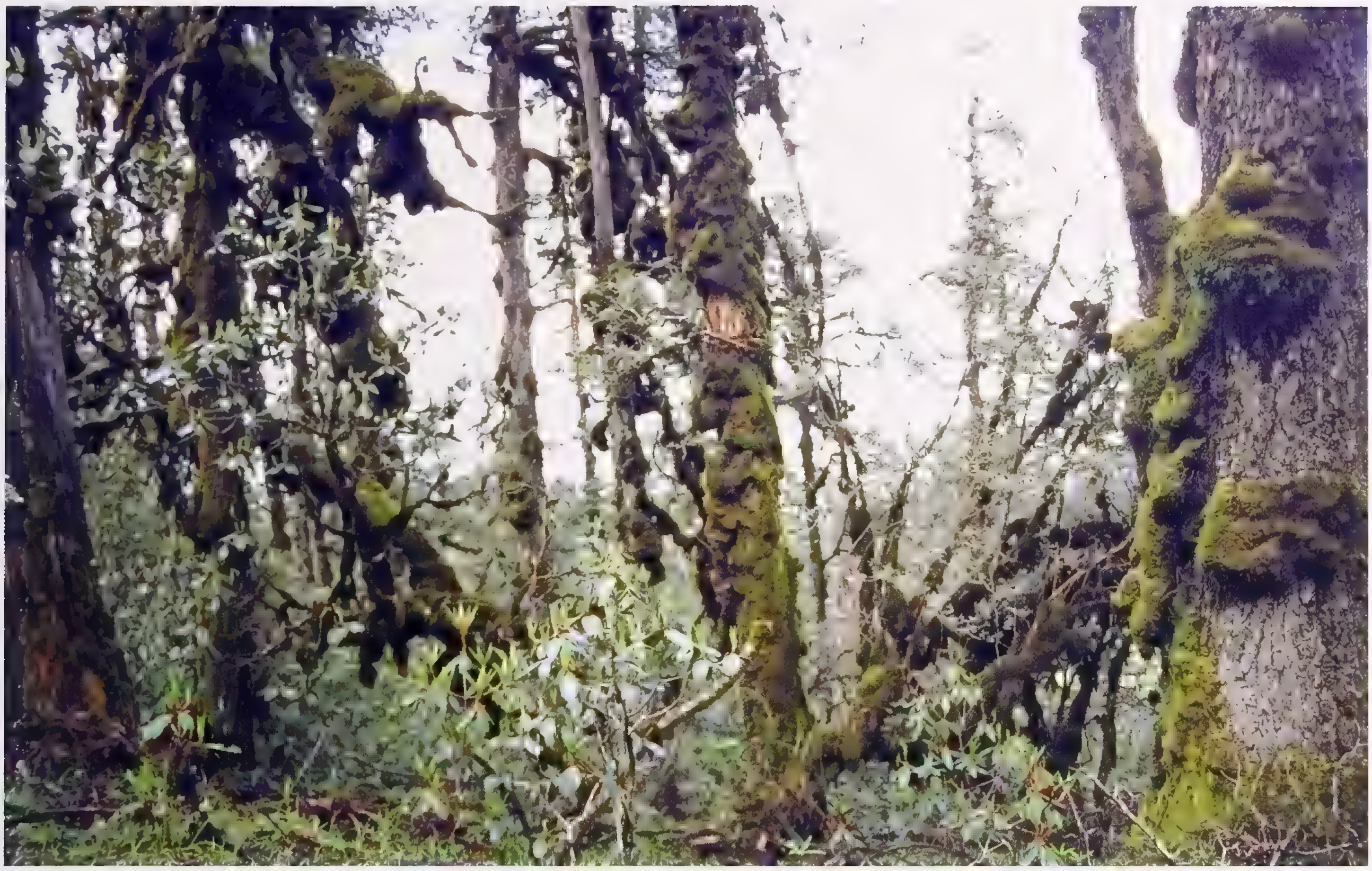
Lathrobium sp. 9

Material examined. Nepal: 4♀♀: "Nepal (Prov. Bagmati), below Thare Pati, 3500 m, 12.IV.81, Löbl & Smetana" (MHNG, cSme, cAss).

Comment. This species is highly similar to, and was found together with *L. spiculatum*. It is distinguished from this species by on average slightly larger body size (length of forebody: 2.3–2.6 mm), a more oblong head and prono-



Figs 290–294. *Medon jaljalensis*. **290:** habitus; **291:** male sternite VII; **292:** male sternite VIII; **293:** aedeagus in lateral view; **294:** aedeagus in ventral view. Scale bars: 290: 1.0 mm; 291–294: 0.2 mm.



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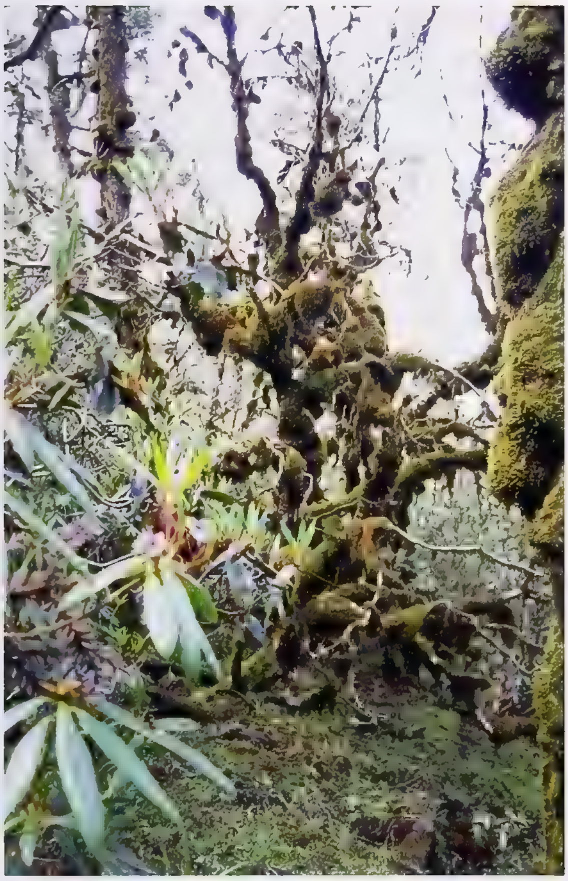

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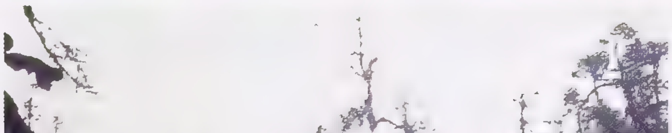

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Figs 295–297. *Lathrobium* habitats in the Rolwaling Himal; photos: Andreas Kleeberg. **295:** type locality of *L. excisum* NE Daldung La pass, 3800 m; **296:** above Simigaon, 2700–2800 m (26 specimens of *L. kleebergi*); **297:** W Daldung La pass, 3300 m (28 specimens of *L. kleebergi*).

tum, larger eyes (composed of approximately 20 ommatidia), coarser punctation of the forebody, and by a broader, less oblong, and posteriorly less strongly convex female sternite VIII.

SPECIES EXCLUDED FROM *LATHROBIUM*

In the course of the revision it was discovered that two species from Nepal that had originally been assigned to *Lathrobium*, *L. jaljalense* Coiffait, 1984 and *L. perpusillum* Coiffait, 1982, in fact belong to genera of the subtribe Medonina. The latter species is dealt with by Assing (2012d).

***Medon jaljalensis* (Coiffait, 1984), comb. n.** (Figs 290–294)
Lathrobium jaljalensis [sic] Coiffait, 1984: 382.

Type material examined. Holotype ♂: "Nepal XI.78 / Jaljale Himal, 2950 m PC31 / Holotype / Lathrobium jaljalensis H. Coiffait / Medon jaljalensis (Coiffait), det. V. Assing 2011" (MNHNP). Paratype ♂: "Nepal XI.78.3 / Jaljale Himal, 2920 m PC-3 / Paratype / Lathrobium jaljalensis H. Coiffait / Medon jaljalensis (Coiffait), det. V. Assing 2011" (MNHNP).

Comment. The original description is based on a male holotype and three paratypes, a male and two females, from "Népal oriental, Jaljale Himal 2950 m" deposited in the Coiffait collection (Coiffait 1984). An examination of the holotype and the male paratype revealed that the species belongs to the genus *Medon* Stephens, 1833.

Redescription. Body length 3.7-3.8 mm; length of forebody 2.0 mm. Habitus as in Fig. 290. Coloration: forebody uniformly reddish to dark-reddish; abdomen uniformly reddish to dark-brown with reddish apex; legs and antennae yellowish to reddish-yellow.

Head almost as wide as long; lateral margins behind eyes straight and subparallel; punctation moderately coarse and moderately sparse, somewhat sparser in median dorsal portion than elsewhere; interstices mostly broader than diameter of punctures and without microsculpture. Eyes moderately large and weakly convex, approximately 0.7 times as long as postocular region in dorsal view.

Pronotum approximately as long as broad and slightly broader than head; punctation similar to that of head, but somewhat denser; interstices without distinct microsculpture, glossy.

Elytra short, approximately 0.7 times as long as pronotum, slightly widened posteriad; humeral angles weakly marked; punctation fine, shallow, and dense; interstices without distinct microsculpture. Hind wings completely reduced.

Abdomen broader than elytra; punctation very fine and moderately dense, barely noticeable in the pronounced microsculpture; posterior margin of tergite VII without palisade fringe.

♂: sternite VII weakly transverse, posterior margin with indistinct excision in the middle, on either side of middle with a row of approximately eight longer marginal setae (Fig. 291); sternite VIII oblong, with moderately deep posterior excision (Fig. 292); aedeagus approximately 0.5 mm long, shaped as in Figs 293–294.

Comparative notes. As can be inferred from the shape and chaetotaxy of the male sternite VII and from the morphology of the aedeagus, this species undoubtedly belongs to the *Medon apicalis* group. It is distinguished from other species of this group by the male sexual characters, from most of them additionally by the short elytra. For illustrations of the micropterous representatives of the *M. apicalis* group known from Nepal see Assing (2010a).

Distribution and natural history. *Medon jaljalensis* is currently known only from the type locality in eastern Nepal, where it was collected at an altitude of almost 3000 m. The reduced wings, the absence of a palisade fringe at the posterior margin of the abdominal tergite VII, and the absence of additinal records suggest that the species has a restricted distribution.

Acknowledgements. I am indebted to the colleagues indicated in the material section for the loan of material under their care. Special thanks are due to Benedikt Feldmann, Andreas Kleeberg, and Aleš Smetana for the generous permission to retain several holotypes and single males needed for future reference purposes. Lee H. Herman (New York) cross-checked the names treated in this article against his unpublished catalogue of Paederinae. Thierry Deuve (MNHNP), Wolfgang Schawaller (SMNS), and Joachim Schmidt (Greifswald) kindly assisted in the identification of localities in Nepal, Irene Schatz (Innsbruck) in arranging the loan of the holotype of *Lathrobium janetscheki*. Harald Schillhammer (NHMW) made scans of excerpts from Franz′ diary available. Benedikt Feldmann proof-read the manuscript.

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The genus *Trisunius* in the Himalaya (Coleoptera: Staphylinidae: Paederinae: Medonina)

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Abstract. The genus *Trisunius* Assing, 2011 is reported from Nepal for the first time. Four species are (re-)described and illustrated: *T. perpusillus* (Coiffait, 1982), comb. n. (ex *Lathrobium* Gravenhorst, 1802), *T. alesi* sp. n. (northeastern Nepal), *T. opaciceps* sp. n. (central Nepal: Manaslu), and *T. manasluensis* sp. n. (central Nepal: Manaslu). Including these species, *Trisunius* is now represented in the Himalaya by five species and comprises a total of 14 species. A supplement to a recent key is provided. The distribution of the genus in the Himalaya is mapped.

Key words. Taxonomy, rove beetles, *Trisunius*, *Lathrobium*, Himalaya, Nepal, new species, new combination, key to species

INTRODUCTION

The recently described medonine genus *Trisunius* previously comprised ten species. Its known distribution ranges from the Himalaya, where it was represented only by *T. monticola* (Cameron, 1932) from Uttaranchal, to eastern China and Thailand. Eight of the ten species have been recorded only from the Chinese province Yunnan. A catalogue and a key to species are provided by Assing (2011).

A taxonomic revision of Himalayan *Lathrobium* Gravenhorst (Assing 2012) revealed that one of the species, *L. perpusillum* Coiffait, 1982, in fact belongs to *Trisunius*. A second, undescribed species was discovered among unidentified *Lathrobium* material from Nepal, and two additional species, both of them undescribed, were found in Paederinae material from Nepal deposited in the Naturkundemuseum Erfurt. These findings suggest that *Trisunius* is widespread in the Himalaya and that the genus is probably represented in this regions by numerous additional species that remain to be discovered.

For a redescription and illustrations of *T. monticola* see Assing (2011).

MATERIAL AND METHODS

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). A digital camera (Nikon Coolpix 995) was used for the photographs.

Head length was measured from the anterior margin of the frons to the posterior margin of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

The map was created using MapCreator 2.0 (primap) software.

COLLECTION MATERIAL DEPOSITORIES

MNHNP	Muséum national d'Histoire naturelle, Paris, France (A. Taghavian)
NME	Naturkundemuseum Erfurt, Germany (M. Hartmann, assisted by W. Apfel)
cAss	author´s private collection

RESULTS

Trisunius perpusillus **(Coiffait, 1982), comb. n.** (Figs 1–4, 21)
Lathrobium perpusillum Coiffait, 1982: 289 f.

Type material examined. Holotype ♂: "Nepal X.81, Kalingchok, 3100 m P.C / Holotype / Lathrobium perpusillum H. Coiffait 1982 / Trisunius perpusillus (Coiffait), det. V. Assing 2011" (MNHNP).

Comment. The original description is based on a unique male holotype from "Népal, Massif du Kalingchok, près

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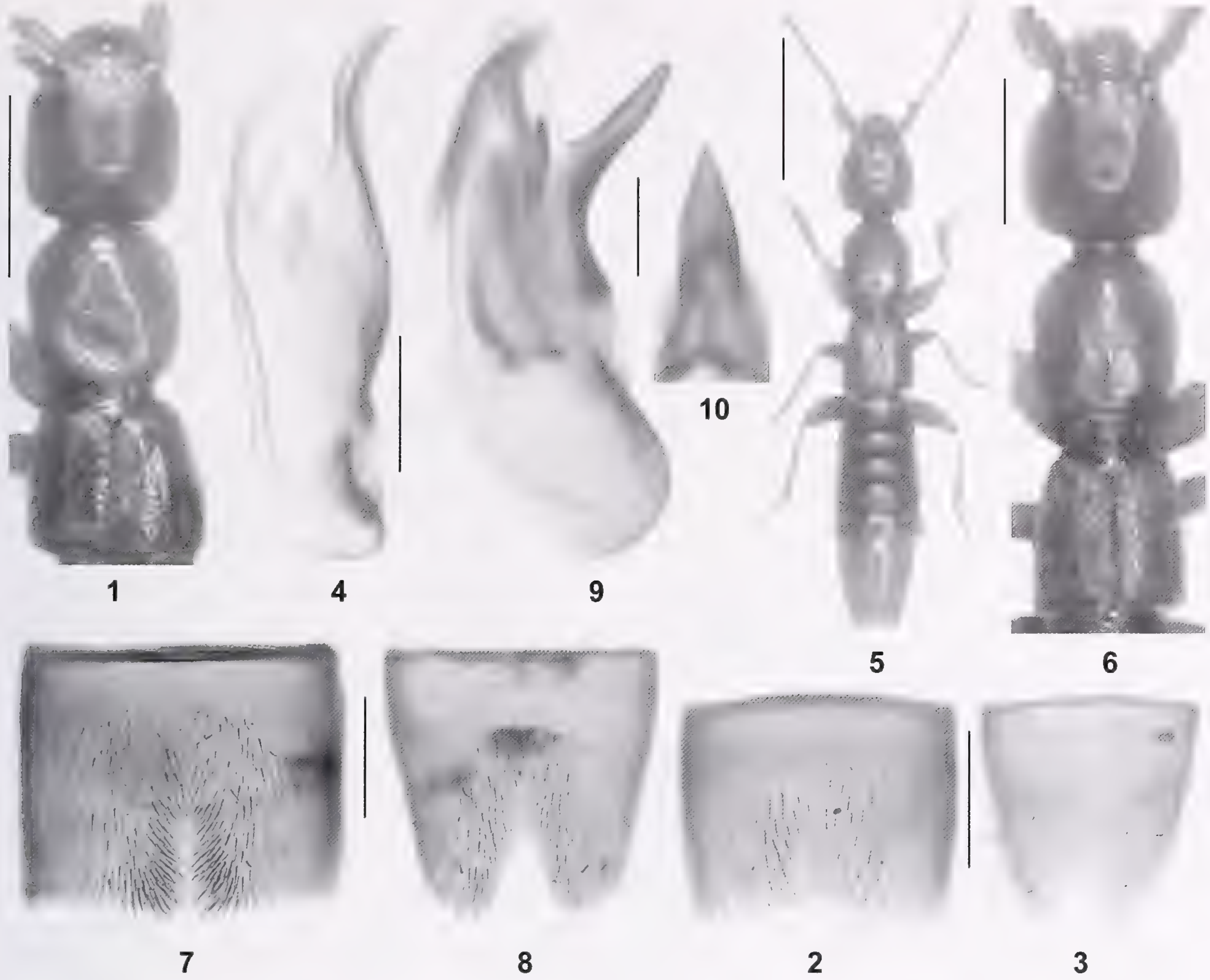


Figs 1–10. *Trisunius perpusillus* (**1–4**) and *T. alesi* (**5–10**). **1, 6:** forebody; **2, 7:** male sternite VII; **3, 8:** male sternite VIII; **4, 9:** aedeagus in lateral view; **5:** habitus; **10:** ventral process of aedeagus in ventral view. Scale bars: 5: 1.0 mm; 1, 6: 0.5 mm; 2–3, 7–8: 0.2 mm; 4, 9–10: 0.1 mm.

de Barbabise [sic], 2370 m [sic]" (Coiffait 1982). An examination of the holotype revealed that this species does not belong to *Lathrobium*, but to *Trisunius*.

Redescription. Very small species, body length 2.8 mm; length of forebody 1.45 mm. Coloration: body uniformly reddish; legs and antennae yellowish.

Head (Fig. 1) oblong, almost 1.1 times as long as broad; punctation very fine, barely noticeable in the pronounced microreticulation, except for a macropuncture on either side in median dorsal portion. Anterior margin of labrum with two tooth-like projections on either side of the U-shaped median incision. Eyes not projecting from lateral contours of head, somewhat less than half as long as postocular region in dorsal view.

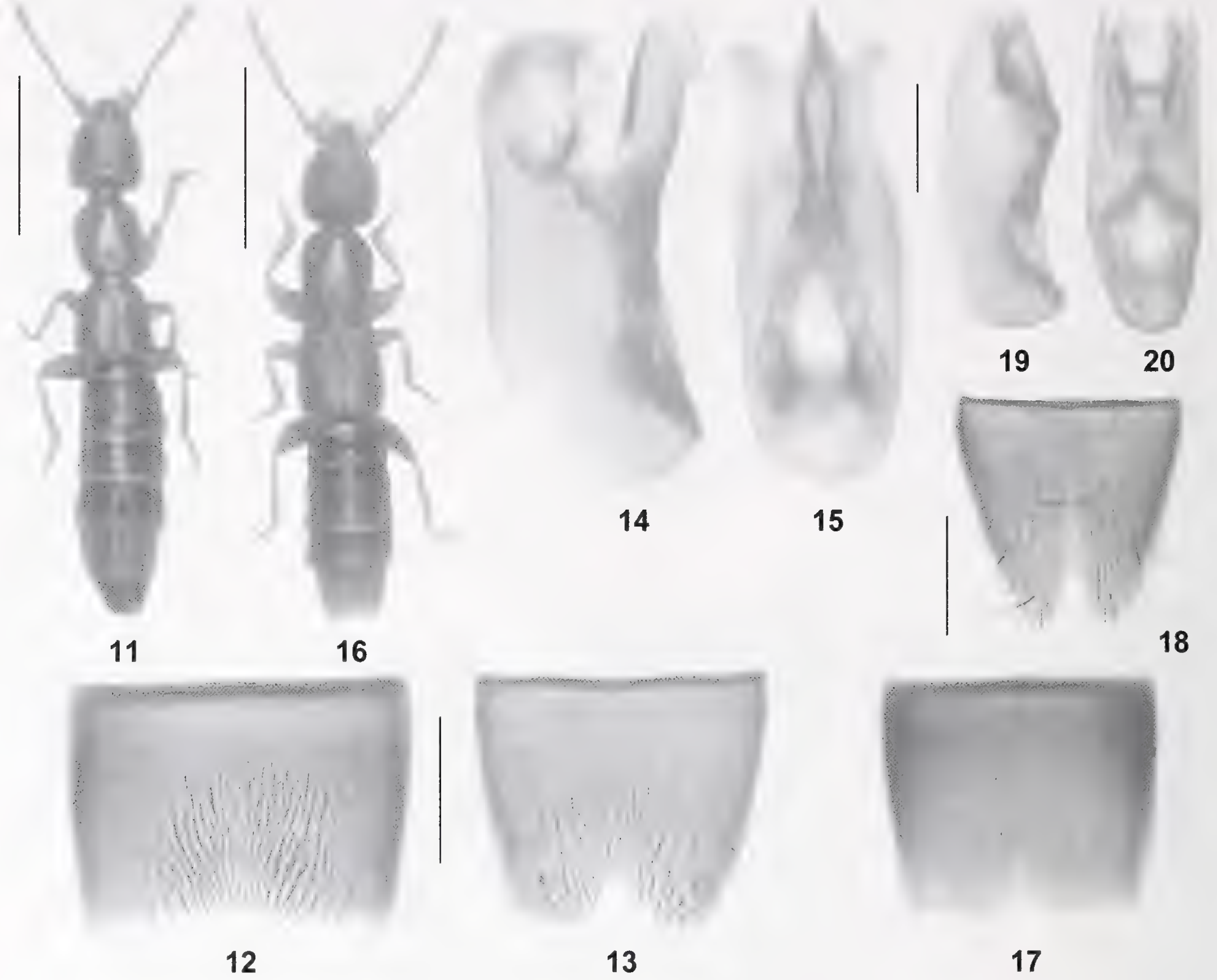
Pronotum (Fig. 1) approximately 1.05 times as long as broad and as broad as head; punctation dense and more distinct than that of head, interstices without distinct microsculpture, glossy.

Elytra short, approximately 0.7 times as long as pronotum (Fig. 1); humeral angles weakly marked; punctation fine and dense; interstices without distinct microsculpture. Hind wings completely reduced.

Abdomen broader than elytra; punctation very fine and dense, barely noticeable in the pronounced microsculpture; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV moderately dilated; sternite VII moderately transverse, with broad and shallow posterior margin (Fig. 2); sternite VIII approximately as long as wide and with small V-shaped posterior excision (Fig. 3); aedeagus approximately 0.4 mm long, shaped as in Fig. 4.

♀: unknown.



Figs 11–20. *Trisunius manasluensis* (**11–15**) and *T. opaciceps* (**16–20**). **11, 16:** habitus; **12, 17:** male sternite VII; **13, 18:** male sternite VIII; **14, 19:** aedeagus in lateral view; **15, 20:** aedeagus in ventral view. Scale bars: 11, 16: 1.0 mm; 12–13, 17–18: 0.2 mm; 14–15, 19–20: 0.1 mm.

Comparative notes. *Trisunius perpusillus* is distinguished from its congeners particularly by the morphology of the aedeagus. For additional characters distinguishing it from other Himalayan representatives of the genus see the key at the end of the article.

Distribution and natural history. The species is currently known only from the type locality, the Kalinchok, a mountain some 13 km to the east of Barahbise and almost 70 km to east-northeast of Kathmandu in eastern central Nepal (Fig. 21). According to the label attached to the holotype, the specimen was collected at an altitude of 3100 m.

***Trisunius alesi* sp. n.** (Figs 5–10, 21)

Type material. Holotype ♂: "Nepal, Khandbari District / above Tashigaon, 3600 m 6.IV.1982, A. & Z. Smetana / Holotypus ♂ *Trisunius alesi* sp. n., det. V. Assing 2012" (cAss).

Etymology. This species is dedicated to Aleš Smetana, Ottawa, who collected the holotype. His generous offer to retain single males for future reference purposes is much appreciated.

Description. Body length 3.8 mm; length of forebody 2.0 mm. Habitus as in Fig. 5. Coloration: body uniformly reddish.

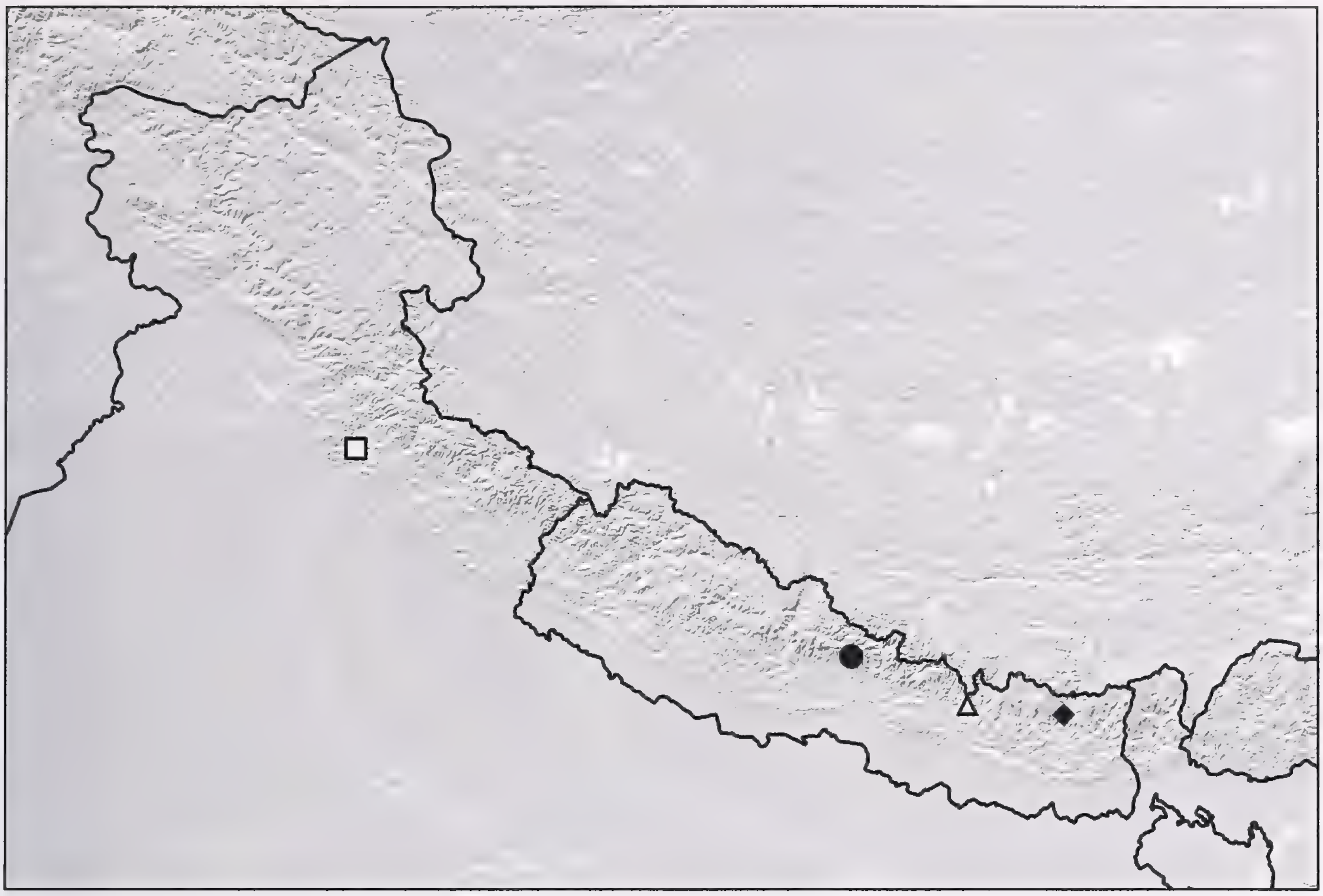


Fig. 21. Distribution of *Trisunius* in the Himalaya: *T. monticola* (square); *T. manasluensis* and *T. opaciceps* (circle); *T. perpusillus* (triangle); *T. alesi* (diamond).

Head (Fig. 6) weakly oblong, approximately 1.05 times as long as broad; punctation dense and fine; interstices with microreticulation and almost matt. Anterior margin of labrum with two tooth-like projections on either side of the U-shaped median incision. Eyes not projecting from lateral contours of head, barely one third as long as postocular region in dorsal view, composed of approximately 15 ommatidia.

Pronotum 1.1 times as long as broad and approximately 0.9 times as broad as head; punctation and microsculpture similar to that of head; midline with narrow shiny band reaching neither anterior nor posterior margins (Fig. 6).

Elytra short, approximately 0.75 times as long as pronotum, dilated posteriorly (Fig. 6); humeral angles weakly marked; punctation fine and dense; interstices without distinct microsculpture. Hind wings completely reduced.

Abdomen distinctly broader than elytra; punctation very fine and dense; interstices with microsculpture; posterior margin of tergite VII with narrow palisade fringe.

♂: protarsomeres I–IV moderately dilated; sternite VII moderately transverse, in posterior half with extensive median impression, this impression furnished with two rather extensive clusters of dense dark setae, posterior margin bisinuate, weakly concave in the middle (Fig. 7); sternite VIII weakly transverse, posteriorly with median impression without modified pubescence, posterior excision relatively deep and almost V-shaped (Fig. 8); aedeagus 0.53 mm long, with relatively shout ventral process (Figs 9–10).

♀: unknown.

Comparative notes. *Trisunius alesi* is distinguished from other Himalayan congeners particularly by its larger size, the uniformly reddish coloration of the body, the small eyes, and by the male sexual characters.

Distribution and natural history. The type locality is situated near Tashigaon [27°36'N, 87°15'E] in Khandbari district, northeastern Nepal (Fig. 21). The holotype was collected at an altitude of 3600 m.

Trisunius manasluensis sp. n. (Figs 11–15, 21)

Type material. Holotype ♂: "Nepal, Manaslu Mts., 28°22'N, 84°29'E, E slope of Ngali Khola Vall., 2000–2300 m, leg. Schmidt, 15.V.2005 / Holotypus ♂ *Trisunius manasluensis* sp. n., det. V. Assing 2012" (NME).

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Etymology. The specific epithet is a latinized adjective derived from the name of the mountain range where this species was discovered.

Description. Body length 3.3 mm; length of forebody 1.7 mm. Habitus as in Fig. 11. Coloration: forebody dark-reddish; abdomen dark-brown; legs and antennae reddish.

Head 1.05 times as long as broad; dorsal surface with very dense microreticulation, with subdued shine; punctation dense and shallow. Anterior margin of labrum with two tooth-like projections on either side of the U-shaped median incision. Eyes not projecting from lateral contours of head, less than half as long as postocular region in dorsal view, composed of approximately 30–40 ommatidia.

Pronotum approximately 1.1 times as long as broad and 0.95 times as broad as head; punctation fine, dense, and shallow; microsculpture weakly pronounced, dorsal surface therefore more shiny than head; midline without impunctate band.

Elytra short, 0.8 times as long as pronotum, lateral margins diverging posteriad in dorsal view; humeral angles weakly marked; punctation dense and shallow; interstices without distinct microsculpture. Hind wings completely reduced.

Abdomen somewhat broader than elytra; punctation very fine, dense on anterior tergites, somwhat sparser on posterior tergites; interstices with shallow microsculpture; posterior margin of tergite VII without palisade fringe.

♂: protarsomeres I–IV weakly dilated; sternite VII strongly transverse, posteriorly with shallow median impression, this impression with slightly stouter setae, posterior margin broadly and weakly concave (Fig. 12); sternite VIII moderately transverse, posterior excision almost V-shaped and not very deep (Fig. 13); aedeagus 0.45 mm long, ventral process slender and of distinctive shape (Figs 14–15).

Comparative notes. This species is characterised particularly by the reduced hind wings, the absence of a palisade fringe at the posterior margin of tergite VII, and by the distinctive shape of the aedeagus.

Etymology. The specific epithet is a latinized adjective derived from the name of the mountain range where this species was discovered.

Distribution and natural history. The type locality is situated in the Manaslu range in central Nepal (Fig. 21), where the holotype was found at an altitude of 2000–2300 m, together with the following species.

***Trisunius opaciceps* sp. n.** (Figs 16–21)

Type material. Holotype ♂: "Nepal, Manaslu Mts., 28°22'N, 84°29'E, E slope of Ngali Khola Vall., 2000–2300 m, leg. Schmidt, 15.V.2005 / Holotypus ♂ *Trisunius opaciceps* sp. n., det. V. Assing 2012" (NME). Paratype ♀: same data as holotype (cAss).

Etymology. The specific epithet is a noun in apposition and alludes to the dull head.

Description. Body length 2.8–3.0 mm; length of forebody 1.6–1.7 mm. Habitus as in Fig. 16. Coloration: head and pronotum dark-brown; elytra reddish-brown with paler posterior margins; abdomen blackish-brown; legs reddish-brown; antennae reddish.

Head approximately as broad as long or weakly oblong; dorsal surface with pronounced, very dense microreticulation, matt; punctation moderately dense and shallow, barely noticeable in the microsculpture. Anterior margin of labrum with two tooth-like projections on either side of the U-shaped median incision. Eyes weakly projecting from lateral contours of head, little more than half as long as postocular region in dorsal view, composed of approximately 40–50 ommatidia.

Pronotum approximately 1.1 times as long as broad and approximately 0.95 times as broad as head; punctation fine, dense, and shallow; microsculpture weakly pronounced, dorsal surface therefore much more shiny than head; impunctate band along midline indistinct or very narrow.

Elytra approximately as long and 1.10–1.15 times as wide pronotum, lateral margins subparallel in dorsal view; humeral angles marked; punctation fine and dense; interstices with indistinct microsculpture. Hind wings apparently present, but possibly of reduced length.

Abdomen approximately as broad as elytra; punctation very fine and dense; interstices with shallow microsculpture; posterior margin of tergite VII with palisade fringe.

♂: protarsomeres I–IV weakly dilated; sternite VII moderately transverse, posteriorly with shallow median impression, pubescence unmodified, posterior margin weakly concave in the middle (Fig. 17); sternite VIII weakly transverse, posteriorly with narrow median impression without pubescence in the middle, posterior excision relatively deep and V-shaped (Fig. 18); aedeagus small, 0.30 mm long, and apically bifid in ventral view (Figs 19–20).

Comparative notes. Based on the synapomorphically derived morphology of the aedeagus (small size, apically bifid), *T. opaciceps* is undoubtedly most closely related to *T. monticola*, from which it is distinguished by smaller size, smaller eyes, more pronounced microreticulation of the head, shorter elytra, and by the shape of the aedeagus (particularly in lateral view). For illustrations of *T. mon-*

ticola see Assing (2011). For characters distinguishing *T. opaciceps* from other Himalayan congeners see the key at the end of the article.

Distribution and natural history. The type locality is identical to that of *T. manasluensis* and situated in the Manaslu range in central Nepal (Fig. 21) at an altitude of 2000–2300 m.

KEY TO SPECIES

In the key in Assing (2011), the species treated in the present paper would key out at couplet 3, together with *T. monticola*. In order to account for the additional species, the key is modified as follows:

3. Species from the Himalaya 3a
– Species from Yunnan, China 4
3a. Elytra at least approximately as long as pronotum. Eyes at least half as long as postocular region in dorsal view. ♂: sternite VIII with relatively deep, V-shaped posterior excision (Fig. 18); aedeagus conspicuously small, approximately 0.3 mm long, apically bifid in ventral view (Fig. 20) 3b
– Elytra distinctly shorter than pronotum. Eyes less than half as long as postocular region in dorsal view. ♂: sternite VIII mostly with less deep and broader posterior excision; aedeagus larger, distinctly longer than 0.3 mm, apically not bifid, and with slender ventral process 3c
3b. Elytra longer than pronotum (Assing 2011: Fig. 58). Eyes distinctly more than half as long as postocular region in dorsal view. Dorsal surface of head with shallower microsculpture, with subdued shine. ♂: aedeagus shaped as in Assing (2011: Figs 65–66). India: Uttaranchal (Fig. 21) ...... ***monticola*** (Cameron)
– Elytra approximately as long as pronotum (Fig. 16). Eyes slightly more than half as long as postocular region in dorsal view. Dorsal surface of head with pronounced microreticulation and matt. ♂: aedeagus shaped as in Figs 19–20. Central Nepal (Fig. 21) .... ***opaciceps*** sp. n.
3c. Larger species; body length 3.8 mm; length of forebody approximately 2.0 mm. Eyes smaller, composed of only approximately 15 ommatidia, barely one third as long as postocular region in dorsal view. Pronotum with distinct microsculpture (Fig. 6). Abdominal tergite VII with narrow palisade fringe posteriorly. ♂: sternite VII with extensive median impression posteriorly, this impression with two clusters of dense dark setae (Fig. 7); sternite VIII with deep posterior excision (Fig. 8); aedeagus larger, 0.53 mm long, shaped as in Figs 9–10. Eastern Nepal: Khandbari district (Fig. 21) .... ***alesi*** sp. n.
– Smaller species; body length 3.3 mm at most; length of forebody 1.7 mm at most. Eyes relatively larger, composed of at least approximately 30 ommatidia, nearly half as long as postocular region in dorsal view. Pronotum without, or with very shallow microsculpture (Fig. 1). Abdominal tergite VII without palisade fringe posteriorly. ♂: sternite VII of different shape and chaetotaxy; sternite VIII with less deep posterior excision; aedeagus 0.45 mm long at most and of different shape 3d
3d. Larger species; body length 3.3 mm; length of forebody 1.7 mm. ♂: sternite VII more strongly transverse and with somewhat stouter pubescence in posterior median impression (Fig. 12); sternite VIII with larger posterior excision (Fig. 13); aedeagus with ventral process of distinctive shape (Figs 14–15). Central Nepal: Manaslu (Fig. 21) ...... ***manasluensis*** sp. n.
– Smaller species; body length 2.8 mm; length of forebody 1.45 mm. ♂: sternite VII neither with distinct impression nor with modified pubescence (Fig. 2); sternite VIII with very small posterior excision (Fig. 3); aedeagus of different shape (Fig. 4). Nepal: Kalinchok (Fig. 21) .... ***T. perpusillus*** (Coiffait)

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Amphibians and reptiles collected by Moritz Wagner, with a focus on the ZFMK collection

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Abstract. Moritz Wagner (1813–1887) is one of the least poorly-known German explorers, geographers and biologists of the 19th century. Between 1836 and 1860, expeditions led him to Algeria, the Caucasus Region, as well as to North-, Central- and South-America. Beside his important scientific contributions to biology, geography and ethnography he also collected large numbers of plant and animal specimens. The collected material is scattered among several European museums and university collections because Wagner only obtained a permanent position after his last voyage. Prior to this he donated his material to experts, funding societies or the institutions where he was a student or in whose collections he worked. The present article is a first contribution towards a review of the herpetological collections made by Moritz Wagner, which includes type material of several amphibians and reptiles. Most specimens were found in the Zoologische Staatssammlung München and the Göttingen collection, which is now housed at the Museum Koenig in Bonn, but the collections in Berlin, Leiden, Paris and Vienna also hold material collected by Wagner.

Key words. Moritz Wagner, historic collections, type material.

INTRODUCTION

Friedrich Johann Carl Moritz Wagner (1813–1887, Fig. 1) was a German scientist and naturalist, honorary professor of ethnology at the Ludwig-Maximilians University and first curator of the Museum of Ethnology (at this time still named "königlich ethnographische Sammlung" [= the Royal Ethnographic Collection]) in Munich. He was a well-known explorer and many of his books where translated to English, French or even Armenian (see Fig. 2) during his lifetime. As a scientist he worked in different subject areas including geography, botany, zoology, ethnology, geology, politics, and journalism. Wagner produced notable results in many of these fields (Beck 1951, 1953, 1971; M. Wagner 1861, 1862; P. Wagner 2008). For example, he hypothesized the course of the Panama Canal decades before it was formally planned and built (M. Wagner 1861, Beck 1971) and was the discoverer of the western source of the river Euphrates (Beck 1971). As a zoologist, he was one of the first scientists to work in the field of zoogeography, comparing distribution patterns, most importantly, of insects, fishes and mammals, but also of reptiles.

These disciplines are also reflected in Wagner's field collections. During his voyages, he collected large numbers of insects, but only a few vertebrate vouchers, mainly fishes. Parts of these collections were lost during the expeditions or during shipment (see below). Moreover, his collections are not stored in one institution, but were dispersed to various important European natural history museums (e.g., the museums of Berlin, Munich, Paris and Vienna). He often donated his material to taxonomists (e.g., Arnold A. Berthold, Hermann Schlegel, Franz Steindachner) who identified the specimens and sometimes added a chapter to his scientific books (e.g., Schlegel in M. Wagner 1841). Other parts of the collections were sold to museums to finance his travels, or were donated to institutes where he studied or worked. It was only his last voyage to South America that was not privately organized, but rather funded by the Bavarian King Maximilian II. Therefore, the main parts of the zoological collection of this expedition were inventoried in the collections of the Zoologische Staatssammlung in Munich (e.g., at least 72 fishes, Neumann 2006), but partly later exchanged with other institutions (e.g., NMW) or destroyed in the Second World War. Nevertheless, Moritz Wagner had a strong relationship to his brother, Rudolf Wagner, who was Professor and Director of the Institute of Physiology in Göttingen, where Moritz Wagner studied geology and geography. It is, therefore, not surprising that Moritz Wagner donated many specimens from his collections from Algeria and Caucasus to the Institute of Physiology and the Zoological Museum at the University of Göttingen.

1st Expedition: Algeria (1836–38)

In the introduction to his book about Algeria Wagner (1841) mentioned that he visited the North African coast in 1834 before his longer voyage to Algeria two years later. Even though this was a short stay it may be assumed that Wagner collected at least insect material, as he also studied this group before his first longer expedition.

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Fig. 1. Moritz Wagner (1813–1887), portrait from Franz Hanfstaengl about 1860. Courtesy of the Stadtmuseum München.

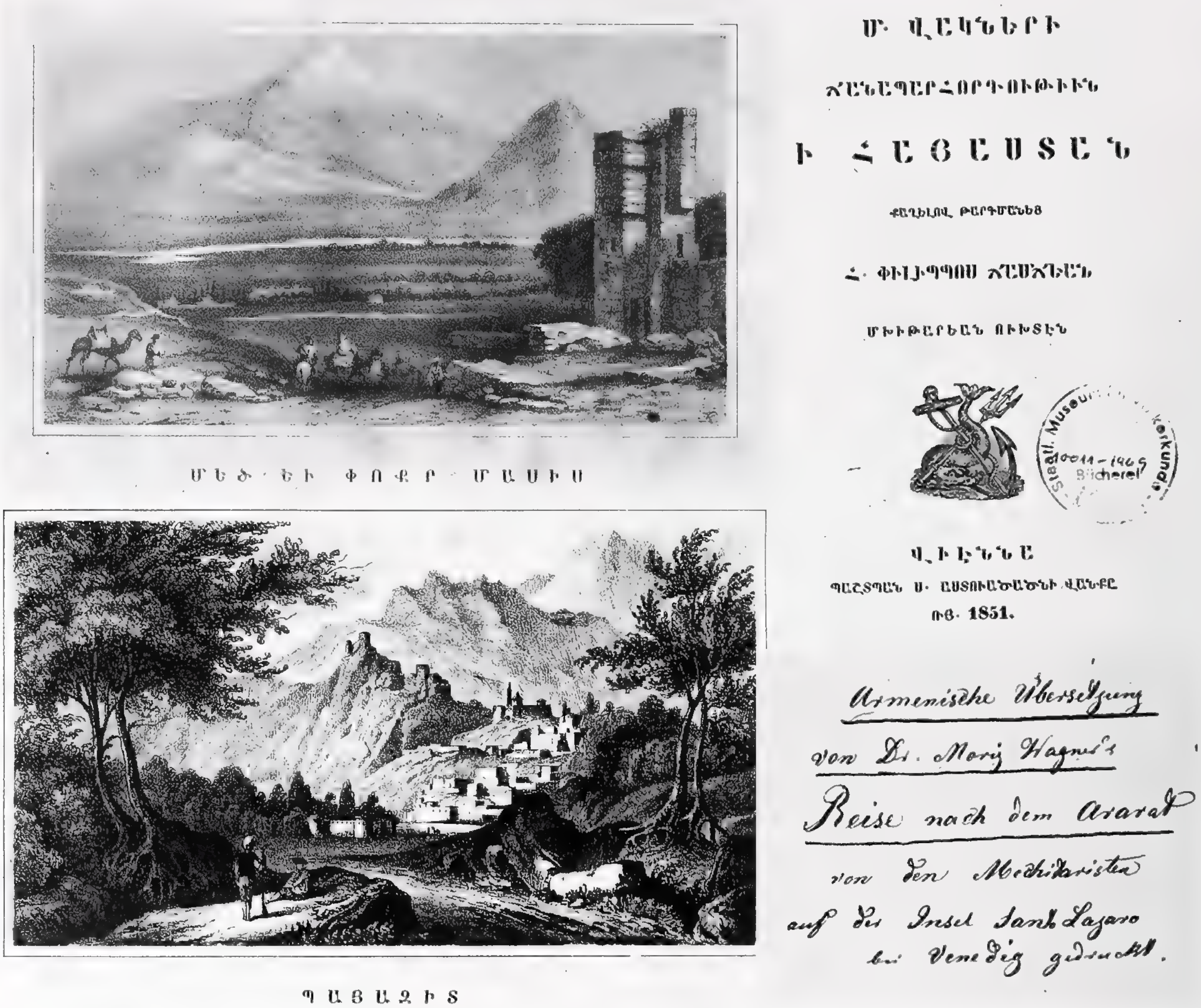
Wagner travelled (1836–38) to Algeria during the French occupation and war (1830–1847) as member of a scientific group within the French army. This was the same expedition during which Alphonse Guichenot, a well-known herpetologist from the Paris Museum, collected data for his herpetological monograph (Guichenot 1850). The amphibians and reptiles collected by Wagner were later identified by Hermann Schlegel (in M. Wagner 1841), a famous herpetologist of the time who was then the assistant of Coenraad Jacob Temminck, Director of the Rijksmuseum van Natuurlijke Historie [today Naturalis] in Leiden. As a result of Schlegel's involvement many Algerian specimens are now part of the Leiden collection. However, Wagner also donated material from Algeria to the Göttingen collection, as he studied geology and geography at this university after his return from Algeria (see P. Wagner 2008). The most important herpetological results of this journey were a series of specimens of the then poorly-known, *Trogonophis wiegmanni* (Fig. 3) and the description of *Bufo mauritanicus* by Schlegel (in M. Wagner 1841).

2nd Expedition: Caucasia (1842–44)

During this expedition Wagner collected material mainly in the Caucasus region east of the Black Sea, today in the modern countries of Armenia, Azerbaijan, Georgia, northwestern Iran, southern Russia, Ukraine (Crimean Peninsula) and Turkey. Like the material from Algeria, parts of Wagner's Caucasian collection were also examined by specialists. The amphibians and reptiles were identified by Arnold Adolph Berthold (see below, and M. Wagner 1850). Moritz Wagner donated his collected material to the Zoological Museum of the University of Göttingen, but also to the Institute of Physiology at the same university, where his brother, Rudolf Wagner, was director at this time. Rudolf mentioned a human skull collected by his brother with the collection number 507 from Caucasia (R. Wagner 1852). Moreover, the catalogue of the Zoological Museum lists vouchers collected by M. Wagner but obtained from the Institute of Physiology (see species account). Berthold (in M. Wagner 1850) mentioned that Wagner collected 29 amphibian and reptile species representing 18 genera, but Berthold actually listed 30 species in total. However, several taxa (Amphibia: *Hyla viridis*; Sauria: *Lacerta strigata*, *Lacerta viridis*, *Ophiops elegans*, *Anguis fragilis*; Ophidia: *Typhlops vermicularis*, *Coronella collaris*, *Coluber leopardinus*, *Coluber sauromates*, *Vipera berus*) are mentioned by Berthold (in M. Wagner 1850), but these are neither found in the catalogue of the museum nor in the collection. Therefore, most probably Wagner also gave parts of this collection to other institutes, or Berthold exchanged these specimens before they were entered in the catalogue. To date it has not been possible to locate these missing vouchers.

3rd expedition: North- and Central America (1852–55) and 4th expedition: Central- and South America (1857–60)

Between 1852 and 1855 Wagner travelled together with the Austrian Carl Ritter von Scherzer through North America to Central America (e.g. Honduras, Nicaragua, Costa Rica, El Salvador). Scherzer (Anonymus 1856) reported to the Austrian Academy of Science that only a few vertebrates were collected and donated to Austrian institutes and private collections. Only a small number of amphibians or reptiles have been identified in the Vienna collection. Furthermore a donation of material to other specific Austrian collections is not indicated in the publications about their travels (Scherzer & M. Wagner 1857; M. Wagner 1870; M. Wagner and Scherzer 1854, 1856) and, therefore, the whereabouts of other material in Austria remains unresolved. The number of vertebrates collected was additionally reduced because some material was lost due to inadequate preservation during the expedition. Moreover, some material from Central America, held in storage prior to shipping, was destroyed during an earthquake on April 16th 1854 in San Salvador (see M. Wagner, 1870).



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ՌՅ. 1851.

Armenische Übersetzung
von Dr. Moriz Wagner's
Reise nach dem Ararat
von den Mechitaristen
auf der Insel Sankt Lazaro
bei Venedig gedruckt.

Fig. 2. Left: Lake Sewan and Mount Ararat (above) and an unknown area (below) in Armenia. Figured in the 1851 published Armenian translation of *Reise nach dem Ararat und dem Hochland Armenien* (Wagner 1848). Right: The title page of the Armenian edition (above) and handwritten information about the publisher (below). Courtesy of the Völkerkundemuseum München.

Therefore, major parts of the third expedition , except those specimens he shipped before the earthquake, were destroyed. Later, on his fourth expedition (1858/1859), Wagner travelled alone to Central and northern South America and collected many insects and fishes (see Neumann 2006), but most probably only a small number of amphibians or reptiles. Most of these specimens were inventoried in the collection of the Zoologische Staatssammlung in Munich, because this journey was funded by the Bavarian King, Maximilian II, although later some were exchanged with the museum in Vienna or destroyed in the Second World War (nearly the entire ZSM fish collection and about half of the herpetological collection). Neumann (2006) mentioned that for the fish collected the location "Neu-Granada" was corrected by Wagner (1864) into "Panama" to indicate that he exclusively collected in this area, which was a province of New-Granada until 1903.

Moritz Wagner as biogeographer and darwinist

Besides his relevance as a collector, Moritz Wagner also was a well-reputed biologist with a broad knowledge of many different groups, such as insects, fish and mammals, but also plants. Continuing from his first contributions, Moritz Wagner studied distribution patterns within different groups (e.g., Wagner 1841, mammals, birds, butterflies, beetles, and land mollusks). This predates "The Geographical Distribution of Animals" by Alfred Russell Wallace (1876) which is generally recognized as one of the early contributions to zoogeography. Therefore, Moritz Wagner must be recognized as one of the founders of this field in biology. Moreover, as he studied distribution pattern in detail and firstly described rivers as a geographic barrier between sibling species. Later, he was influenced by e.g., Leopold von Buch and Alexander von Humboldt and therefore biogeography was a part of nearly all of his contributions, but rarely he published works exclusively in this field (e.g., Wagner 1866). However, it was the publication of Darwin's epochal work "On the Origin of Species" which stimulated Moritz Wagner to develop his "Migrationstheorie" [= theory on the migration of species]. Here, he first described allopatric (geographic) speciation, which was later adopted by Ernst Mayr. Even though Wagner (e.g., 1868) initially saw his theory as a good argument to support Darwin's work, it was generally recognized by others e.g., Haeckel and Weismann as anti-Darwinian. Moritz Wagner (1868) argued that the geographic isolation of two populations is the most important requirement for speciation. Darwin, on the other hand, at first recognized Wagner's theory, but considered isolation as a less important factor in speciation; later he totally ignored it (P. Wagner 2008).

Remarks on the herpetological collection of the Zoological Museum at the University of Göttingen in respect to material collected by Moritz Wagner

Apart from several historically important private collections (which partly became state museums later on), the Zoological Museum of Göttingen is among the oldest institutional German natural history museum. Since 1773 it had been a department of the Royal (i.e., Kingdom of Hannover) Academic Museum and received its own building in 1793. The first director and curator of the zoological collection was, from 1776 onwards, the famous Johann Friedrich Blumenbach (1752–1840) whose work "Handbuch der Naturgeschichte" [= Treatise of natural history] established his reputation as one of the founders of the modern discipline of comparative anatomy (see Böhme & Bischoff 1984).

After Blumenbach's death Arnold Adolph Berthold (1803–1861) became his successor. His fields of research were especially broad, one focus being the first experimental studies on hormonal effects. However, of relevance for the present paper are his taxonomic works about crustaceans, amphibians and reptiles. In this context, he contributed an important section to Moritz Wagner's book "Reise nach Kolchis" [= Travel to Colchis] where he examined the material donated by M. Wagner to the Zoological Museum in Göttingen. Berthold's connection to M. Wagner was most likely due to Wagner's brother Rudolf Wagner, who was Professor and Director of the Institute of Physiology at the University of Göttingen and may have influenced Moritz to deposit his materials from Colchis as well as other voyages in this museum. After Berthold's death, Wilhelm Moritz Keferstein (1833–1870) was able to continue the herpetological tradition at the Göttingen museum with his work on amphibians from Costa Rica and Australia. But with his early death the phase of active herpetological research ended. Four years later, in 1874, the herpetology section improved when E. Ehlers became the curator and herpetologists like George Albert Boulenger and Franz Werner studied the collection. In addition, important collections from South America, Australia and Asia were accessioned into the collection during this time. As a result, spaces for public exhibitions and scientific collections became limited and probably therefore, some collections were donated to other museums (including a bird collection to Hannover, the fish collection to Hamburg). The herpetology collection was revised twice in Göttingen, in 1968 and 1970, and a third time during the inventory in Bonn, and several specimens must be regarded as lost. Unfortunately, it was not possible to ascertain the reasons of these losses between the time of the inventories and the transfer to the Museum Koenig in Bonn, where the collection is stored today.

It is the aim of this paper to summarize the herpetological collections of Moritz Wagner, with a special focus on the Göttingen material (now stored in Bonn), but also including known material from the museums in Berlin, Leiden, Munich and Vienna.

MATERIAL & METHODS

Species accounts are headed with the current valid name of the identified species. Information of specimen records is referenced with "Material" which lists the specimens with their current collection number, old collection numbers if available, locality data, collector and, if given, the collection date. The "Catalogue name" provides the historical museum catalogue number if the specimen was originally inventoried in a different collection, together with the species name given in the respective catalogue. If a specimen is mentioned in the literature, the "Citation" references the respective publication, accompanied by the mentioned species name and locality (if the locality is different from that given with the specimen or in the museum catalogue). Is there no citation available the section was removed. Other information is provided under "Remarks".

Museum abbreviations used within this publication: NMW, Naturhistorisches Museum, Wien, Austria; RMNH, Naturalis [formerly Rijksmuseum van Natuurlijke Historie], Leiden, Netherlands; ZFMK, Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany; ZMB, Museum für Naturkunde [formerly Zoologisches Museum Berlin], Berlin, Germany; ZMUG, Zoologisches Museum der Universität Göttingen, Göttingen, Germany [sometimes incorrectly referred to as ZIUG= Zoological Institut of the University of Göttingen, which is a different collection]; ZSM, Zoologische Staatssammlung München, Munich, Germany.

List of extant specimens of amphibians and reptiles collected by Moritz Wagner

Amphibia, Gymnophiona

[Caeciliidae]

***Caecilia albiventris* (Daudin, 1803)**
Material: ZSM 2570/0 from "Ecuador" collected by "M. Wagner".
Catalogue name: "*Caecilia albiventris*".

Amphibia, Caudata

[Ambystomidae]

***Ambystoma maculatum* (Shaw, 1802)**
Material: ZSM 1259/0 [5 ex.] from "Wisconsin," USA collected by "M. Wagner".
Catalogue name: "*Ambystoma maculatum*".

***Ambystoma jeffersonianum* (Green, 1827)**
Material: ZSM 1261/0 [8 ex.] from "Wisconsin," USA collected by "M. Wagner".
Catalogue name: "*Ambystoma jeffersonianum*".
Remarks: This species does not occur in Wisconsin and it needs to be clarified if it is a misidentification or a wrong locality..

[Proteidae]

***Necturus maculosus* Rafinesque, 1818**
Material: ZFMK 27701 [ZMUG 26a] from "Nord Amerika" [=North America, no further locality specified] donated by the "Ph[ysiological] I[nstitute]"; ZFMK 27702 [ZMUG 26c] from "Nord Amerika" [=North America, no further locality specified] collected in 1853.
Catalogue name: "*Necturus maculatus*" [ZMUG].Remarks: There is no collector specified in the ZMUG catalogue but the locality is one collected by Wagner in 1853 and the donation was via the former the Physiological Institute, where Wagner's brother was director. This strongly suggests that it was collected by Moritz Wagner.

[Plethodontidae]

***Bolitoglossa palmata* (Werner, 1897)**
Material: NMW 22862 [lectotype] from "Cordillera," Ecuador collected by "M. Wagler [sic!]."
Catalogue name: "*Spelerpes palmatus*".
Citation: As "*Spelerpes palmatus*" by Werner (1897a); as "*Spelerpes palmatus* Werner" collected by "M. Wagler [sic!]" by Häupl et al. (1994).
Remarks: Werner (1897a) mentioned that the type series consists of three specimens from Ecuador, two of which are housed at the ZSM, and one in the NMW collection. Moreover, he indicated that the specimens are from different collectors ([Ludwig Karl]"Schmarda" [Austrian biogeographer and collector, 1819–1908] and "M. Wagner") and from the original source ["(…) besitzt das zoolog. Museum der Wiener Universität ein junges, die zoolog. Sammlung des Staates in München zwei größere Exemplare, welche alle aus Ecuador stammen (Schmarda bezw. M. Wagner coll.)"] it may be concluded that the Vienna specimen was collected by "Schmarda", while the two Munich specimens by "M. Wagner". In any case, the collector "M. Wagler" mentioned by Häupl et al. (1994) is obviously a misspelling, but refers rather to Moritz Wagner than to "Schmarda". This specimen (NMW 22862 [formerly ZIUW Q43 fide Häupl et al. 1994]) was designated as the lectotype by Brame & Wake (1962: 173).

[Salamandridae]

***Notophthalmus viridescens* (Rafinesque, 1820)**
Material: ZSM 1241/0 [8 ex.], ZSM 1243/0 [6 ex.] from "Wisconsin," USA collected by "M. Wagner".
Catalogue name: "*Triturus viridescens*".

***Ommatotriton ophryticus* (Berthold, 1846)**
Material: ZFMK 27793 [ZMUG 22a] [lectotype] from "Tiflis" [=Tbilisi], Georgia, collected by "M. Wagner" in 1846.
Catalogue name: "*Triton ophriticus*" [sic!] [ZMUG].
Citation: "*Triton ophryticus* n. sp.", from „bei Tiflis" [= near Tbilisi], (Berthold 1846); "*Triton ophryticus* n. sp.", from „aus Grusien [Georgia] und von den Abhängen des Kaukasus," Berthold in M. Wagner (1850, p. 335).
Remarks: Mentioning two specimens, Berthold (in M. Wagner 1850) intended to describe "*Triton ophryticus*" in his checklist of the amphibians and reptiles collected by Moritz Wagner. However, the publishing of this book dragged out and Berthold published the description in advance (Berthold 1846) in identical form to the later-published chapter (in Wagner 1850). One of the two syntypes seems to be lost and therefore ZFMK 27793 was designated as the lectotype by Böhme & Bischoff (1984).

***Triturus karelini* Strauch, 1870**
Material: ZFMK 27779 [ZMUG 16m, ZMUG 18] from "Tiflis" [=Tbilisi], Georgia, collected by "M. Wagner" in 1846.
Catalogue name: "*Triton cristatus*" [ZMUG 16m]; "*T. vulgaris*" [ZMUG 18].
Remarks: Berthold (in M. Wagner 1850) mentioned three species of the genus *Triturus*: *T. ophryticus*, *T. taeniatus* and *T. nycthemerus*. While the first was collected in "Tiflis", the latter two were collected at the "türkisch-pontischen Küste [southern shore of the Black Sea]" and are therefore not identical with the given locality of this specimens. The first of these species was described by Berthold (1846, in Wagner 1850) and so that obviously this specimen was not mentioned by him (Berthold in Wagner 1850).

Amphibia, Anura

[Bufonidae]

***Atelopus longirostris* (Cope, 1868)**

Material: ZSM 1017/0 from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Atelopus longirostris*".

***Atelopus varius* (Lichtenstein & von Martens, 1856)**

Material: NMW 3875.1–4 [4 ex., syntypes] from "Costa Rica" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Hylaemorphus pluto*".
Citation: As "*Hylaemorphus pluto*" by Schmidt (1858), Savage (1972).
Remarks: According to Savage (1972), these specimens are the syntypes of *Hylaemorphus pluto* Schmidt, 1858. The type locality "Costa Rica" was later restricted to "Cartago, Cantón Cartago, Provincia Cartago, Costa Rica" by Savage (1974).

***Bufo mauritanicus* Schlegel, 1841**

Material: ZFMK 27979 [ZMUG 56a] from "Algier," Algeria [no further locality specified] collected by "M. Wagner"; RMNH 2122 [holotype] from "Umgebungen von Algier" [=vicinities of Algier] collected by "M.F. Wagner".
Catalogue name: "*Bufo mauritanicus*".
Citation: "*Bufo mauritanicus*," Schlegel (in M. Wagner 1841, part III, 134).
Remarks: Even though this species was described by Schlegel (in M. Wagner 1841) the ZFMK voucher is not a type specimen, because Schlegel clearly mentioned a single voucher ["Das vorliegende Exemplar wurde in den Umgebungen von Algier gefunden.", page 137 in Wagner 1841] and this holotype is present in the herpetology collection of Naturalis in Leiden. However, Schlegel explicitly mentioned that it was not his intention to describe *Bufo mauritanicus* as a new species ("Wenn wir der in Algerien vorkommenden großen Kröte diesen neuen Namen beilegen, so geschieht dies nur, um ihre Herkunft anzudeuten, und wir wollen dieselbe keineswegs schon als neue Art angesehen wissen."), but he gave a detailed description and diagnosis. Therefore according to the International Code of zoological Nomenclature (ICZN 1999) this is a valid description. Schlegel is widely accepted as the sole author, but the entire description is in the plural, giving the impression of more than one author. This was a common style of formal writing at the time, but the intention of the usage of the German 'wir' cannot be finally resolved. Wagner (1841) mentioned that the species is common in the lowlands of Metidscha and rare near Bona.

***Dendrobates tinctorius* (Cuvier, 1797)**

Material: ZSM 1012/0 from "Central Amerika" [=Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: "*Dendrobates tinctorius*".

[Discoglossidae]

***Discoglossus pictus pictus* Otth, 1837**

Material: ZFMK 27894 [ZMUG 35a] from „Algier," Algeria [no further locality specified] collected by "M. Wagner"; RMNH 1955 from "Algeria" [no further locality specified] collected by "M. F. Wagner".
Catalogue name: "*Discoglossus pictus*" [ZMUG].
Citation: "*Rana picta*," Schlegel (in M. Wagner 1841, part III, 134).
Remarks: Even though Schlegel (in M. Wagner 1841) mentioned the genus *Discoglossus* he did not accept this taxonomic assignation of 'modern authors' and still referred the species to the genus *Rana*.

[Hemiphractidae]

***Gastrotheca marsupiata* (Duméril & Bibron, 1841)**

Material: ZSM 1188/0 [4 ex.] from "Pichincha," Ecuador collected by "M. Wagner".
Catalogue name: "*Gastrotheca marsupiata*".

***Hemiphractus fasciatus* Peters, 1862**

Material: ZSM 36/0 [holotype] from "Catassatal" [sic!] ("Pastassa-Thal an der Ostseite der Anden [=Pastaza valley on the eastern slope of the Andes] in Ecuador" according to the description) collected by "M. Wagner".
Catalogue name: "*Ceratohyla fasciata*".
Citation: As "*Hemiphractus fasciatus*" by Trueb (1974) and Glaw & Franzen (2006).
Remarks: According to Trueb (1974) the locality is erroneous.

[Hylidae]

***Duellmanohyla uranochroa* (Cope, 1875)**

Material: NMW 6175 from "Costa Rica," [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Hyla uranochroa*".

***Hyla meridionalis* Boettger, 1874**

Material: RMNH 1699 from "Algeria" [no further locality specified] collected by M. Wagner.
Catalogue name: "*Hyla arborea*".
Citation: As "*Hyla arborea*" by Schlegel (in M. Wagner 1841, part III, 133).
Remarks: Although Schlegel (in M. Wagner 1841) mentioned several specimens, this is the only known voucher and was, at this time, the first record for Algeria.

***Hyla versicolor* (LeConte, 1825)**

Material: ZSM 1162/0 [3 ex.] from "Wisconsin," USA collected by "M. Wagner".
Catalogue name: "*Hyla versicolor*".

[Ranidae]

***Lithobates catesbeianus* (Shaw, 1802)**

Material: NMW 2926 from "Costa Rica" [no further lo-

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cality specified] collected by "M. Wagner".
Catalogue name: "*Rana pipiens*".
Remarks: This species does not does not occur in Costa Rica and was probably collected during Wagner's North America travels.

***Pelophylax saharicus* (Boulenger, 1913)**
Material: RMNH 1942 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Rana esculenta*".
Citation: As "*Rana esculenta*" by Schlegel (in M. Wagner 1841, part III, 133).
Remarks: Schlegel (in M. Wagner 1841) mentioned several specimens, but this is the only known surviving voucher of this species from Wagner's travels.

[Strabomantidae]
***Pristimantis unistrigatus* (Günther, 1859)**
Material: ZSM 1052/0 from "Süd Amerika" [South America, no further locality specified] collected by "M. Wagner".
Catalogue name: "*Eleutherodactylus unistrigatus*".

Reptilia, Testudinae
[Chelydridae]
***Chelydra rossignoni* (Bocourt, 1868)**
Material: ZMB 125 from "Mittelamerica" [=Central America, no further locality specified] collected by "Wagner".
Catalogue name: "*Chelydra* (*Emysaurus*) *serpentina*".

***Chelydra serpentina* (Linnaeus, 1758)**
Material: ZFMK 73776 [ZMUG 29b] from "Nordamer[ika]" [=North America, no further locality specified] collected by "Mor. Wagner" in 1853.
Catalogue name: "*Cinosternum pennsylvanicum*" [ZMUG].
Remarks: Specimens of the genera *Kinosternon* and *Chelydra* are of course very distinct and specimens were likely mixed up earlier in the Göttingen (ZMUG) collection.

[Geoemydidae]
***Rhinoclemmys punctularia* (Daudin, 1801)**
Material: ZSM 88/0 from "Centralamerika" [=Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: *Nicoria punctularia.*

[Kinosternidae]
***Kinosternon subrubrum* Lacépède, 1788**
Material: ZFMK 73778 [ZMUG 29a] from "Nordamer[ika]" [=North America, no further locality specified] collected by "Mor. Wagner" in 1853.
Catalogue name: "*Cinosternum pennsylvanicum*" [ZMUG].

[Testudinidae]
***Testudo graeca graeca* Linnaeus, 1758**
Material: RMNH 3234 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Testudo graeca*".
Citation: As "*Testudo graeca* var. *mauritanica*" by Schlegel (in M. Wagner 1841, part III, 106).
Remarks: Schlegel (in M. Wagner 1841) only mentioned *T. graeca* var. *mauritanica* but obviously the collected series contained more than one species (see next species account). Wagner (1841) mentioned that he found this species at all localities he visited in Algeria, and refers to areas with the Mediterranean dwarf Palm (*Chamaerops humilis*) as typical habitat where the specimens hide under leaves of this palm.

***Testudo graeca* Linnaeus, 1758**
Material: ZFMK 73732-733 [ZMUG 2e] from "Algier," [=Algeria, no further locality specified] collected by "M. Wagner", donated by "Phys[iologisches] Inst[itut]".
Catalogue name: "*Testudo ibera*" [ZMUG].
Citation: As "*Testudo graeca* var. *mauritanica*" by Schlegel (in M. Wagner 1841, part III, 106).
Remarks: The specimens were donated to the Zoological Museum in Göttingen from the Institute of Physiology of the same university. The head of the institute at this time was Rudolf Wagner, the older brother of Moritz Wagner. M. Wagner thus gave material directly to his brother as well as to the museum and its director, A. Berthold.

Reptilia, Amphisbaenia
[Trogonophiidae]
***Trogonophis wiegmanni* Kaup, 1830**
Material: RMNH 3584 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Amphisbaena wiegmannii*".
Citation: As "*Amphisbaena wiegmannii*" by Schlegel (in M. Wagner 1841, part III, 122, tab. VI).
Remarks: Schlegel (in M. Wagner 1841) mentioned that Wagner collected several specimens but to date this is the single known preserved specimen in a reference collection. He gave a very detailed description and figured the at this time largest specimen of the series (see Fig. 2). Moritz Wagner (1841) mentioned it as a rare species with a disjunct distribution and even restricted to small areas in the habitats. He collected three specimens in March 1837 at "Cap Matifu" ("eight hours" east of Algiers) under stones and mentioned this locality as the easternmost in Algeria. In May 1838 he collected a series under stones near Mostaganem and mentioned that this is the sole locality in Algeria where the species is common. He described the habitat as a vegetationless sandy area and mentioned May as mating season.

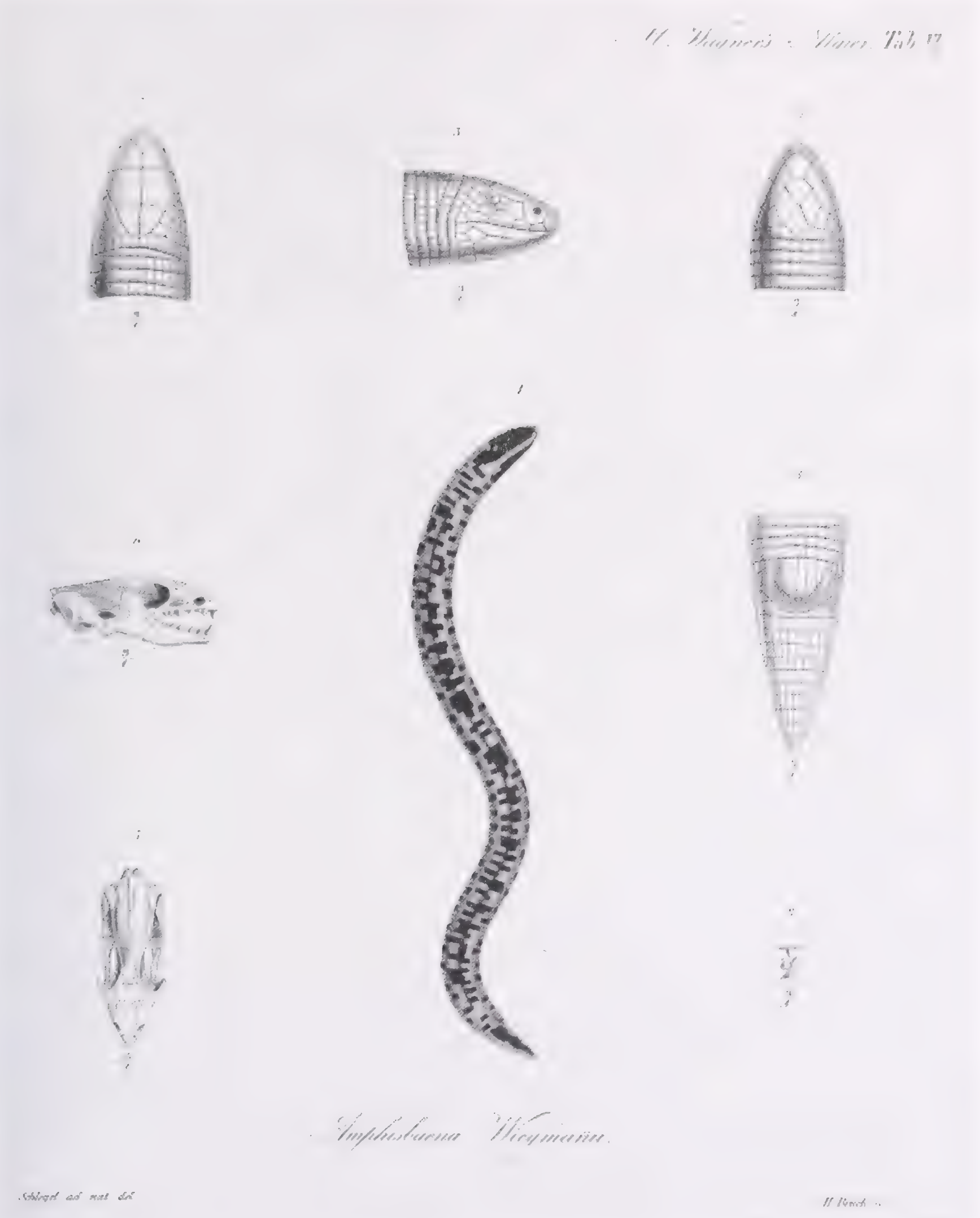
M. Wagner's Reise. Tab. 17
Amphisbaena Wiegmanni.
Schlegel ad nat. del.

Fig. 3. The specimen of *Trogonophis wiegmanni* Kaup, 1830 figured in the rare atlas volume of Wagner (1841).

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Reptilia, Sauria

[Agamidae]

***Paralaudakia caucasia* (Eichwald, 1831)**

Material: ZFMK 20840-841 [ZMUG 414c] from "Tiflis" [=Tbilissi], Georgia collected by "M. Wagner" in 1846.
Catalogue name:"*Agama stellio*"[ZMUG].
Citation: As "*Stellio caucasius* Eichwald" from "aus Grusien [Georgia] und von den Abhängen des Kaukasus [and the mounatin slopes of the Caucasus]," by Berthold (in M. Wagner 1850, p. 329).
Remarks: Surprisingly, Berthold's (in M. Wagner 1850) diagnosis of the voucher was initially right but later ignored in the ZMUG catalogue and inventoried there as *A. stellio*. Berthold (in M. Wagner 1850) also only mentioned one voucher, whereas there are two specimens with the same locality in the collection. After 1890 the vouchers were stored in formalin and lost coloration, but Berthold (in M. Wagner 1850) described the relatively freshly preserved specimens as having a ground color of dirty green to yellow with a yellow vertebral stripe, head gray and belly olive-green. Lateral parts of the body with black markings.

***Phrynocephalus persicus* De Filippi, 1863**

Material: ZFMK 26381 [ZMUG 154a] from "Urmia", Iran collected by "M. Wagner" in 1846.
Catalogue name: "*Phrynocephalus helioscopus*" [ZMUG].
Citation: As "*Phrynocephalus helioscopus* Kaup" from "aus Grusien [Georgia] und von den Abhängen des Kaukasus" by Berthold (in M. Wagner 1850, p. 330).
Remarks: Berthold (in M. Wagner 1850) mentioned two collected specimens with the remark that the species is very widespread along the coast of the Caspian Sea.

[Anguidae]

***Pseudopus apodus* (Pallas, 1775)**

Material: ZFMK 26394 [ZMUG 36d] from "Tiflis" [=Tbilissi], Georgia collected by "M. Wagner" in 1846.
Catalogue name: "*Ophisaurus apus*" [ZMUG].
Citation: As "*Pseudopus serpentinus* Merrem" from "aus Grusien [Georgia] und von den Abhängen des Kaukasus" by Berthold (in M. Wagner 1850, p. 331).
Remarks: Berthold (in M. Wagner 1850) mentioned two vouchers of ‚*Pseudopus serpentinus* Merrem' and assigned a juvenile specimen to ‚*Pseudopus fischeri* Ménét.'.

[Chamaeleonidae]

***Chamaeleo chamaeleon* (Linnaeus, 1758)**

Material: RMNH 2990 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Chamaeleon africanus*".
Citation: As "*Chamaeleo africanus*" by Schlegel (in M. Wagner 1841, part III, 111).
Remarks: Wagner (1841) mentioned that he found the chameleon only in the vicinities of Algiers, in the western parts of the country, where it is common in Arzew, Mostaganem and Oran, and in inland places (Mascara, Tlemsan). In the lowlands of Metidscha he found the species on shrubs, mainly on oleander (*Nerium oleander*).

[Corytophanidae]

***Basiliscus basiliscus* (Linnaeus, 1758)**

Material: ZSM 494/0 from "Mittelamerika" [=Central America, no further locality specified] collected by "M. Wagner"; ZSM 495/0 from "Mittelamerika" [=Central America, no further locality specified] collected by "M. Wagner"; ZSM 507/0 from "Panama" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Basiliscus mitratus*" [ZSM 494/0]; "*Basiliscus americanus*" [ZSM 495/0; ZSM 507/0].

***Basiliscus vittatus* Wiegmann, 1828**

Material: ZSM 496/0 [3 ex.] from "Central-Amerika" [=Central America, no further locality specified] collected by "? M. Wagner".
Catalogue name: "*Basiliscus vittatus*".
Remarks: Even though the collector is mentioned as questionable, the locality is consistent with other ZSM material collected by M. Wagner.

[Dactyloidae]

***Anolis auratus* (Daudin, 1802)**

Material: ZSM 484/0 from "Chiriqui," Panama collected by "M. Wagner"; ZSM 485/0 from "Mittelamerika" [= Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: "*Norops auratus*".

***Anolis carolinensis* Voigt, 1832**

Material: ZSM 467/0 [2 ex.], ZSM 468/0 [5 ex.], ZSM 469/0 [14 ex.] from "Louisiana," USA collected by "M. Wagner".
Catalogue name: "*Anolis carolinensis*".

***Anolis porcatus* Gray, 1840**

Material: ZMB 517 [3 ex.] from "Centralam[erca]" [= Central America, no further locality specified] collected by "Moritz Wagner".
Catalogue name: "*Anolis porcatus*".
Remarks: This is a Cuban endemic species and not found in Central America. However, on their sea passage back from Honduras to New York, Wagner and Scherzer travelled via Jamaica, Haiti, Puerto Rico, St. Thomas and Havana. Therefore, it seems obvious that the locality mentioned in the catalogue is incorrect.

***Anolis sagrei* Duméril & Bibron, 1837**

Material: NMW 12714 from "Costa Rica" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Anolis sagrei*".

[Gymnophthalmidae]

Bachia heteropa **(Lichtenstein & von Martens, 1856)**
Material: ZMB 52679 [formerly ZMB 1175, paralectotype] from "Palmas de St. Matias" [=San Matias, Antioquia, Colombia? fide Bauer & Günther 1994] (label on the jar only reads "Venezuela") collected by "Wagner".
Catalogue name: "*Chalcides heteropus*", "*Cophias heteropus*".
Citation: As "*Chalcides heteropus*" by Lichtenstein & von Martens (1856).

Pholidobolus affinis **(Peters, 1863)**
Material: ZSM 644/0/1 [holotype] from "Pichincha," Ecuador, collected by "M. Wagner"; ZSM 644/0/2-5 [3 adults, 1 subadult, ?paratypes], all with the same data as the holotype.
Catalogue name: "*Ecpleopus affinis* (Ptrs.) – *aspidolaemus* Pet.".
Citation: As "*Ecpleopus affinis*" by Peters (1863).
Remarks: According to Franzen & Glaw (2007) ZSM 644/0/1 agrees with Peters' description of *Ecpleopus affinis* and is without doubt the holotype. The complete series consists of five specimens (see above) and Franzen & Glaw (2007) recognized these specimens as questionable paratypes.

[Hoplocercidae]

Enyalioides laticeps **(Guichenot, 1855)**
Material: ZSM 499/0 from "Pastassathal" [=Pastaza valley], Ecuador collected by "M. Wagner".
Catalogue name: "*Enyalioides laticeps*".

Enyalioides praestabilis **(O'Shaughnessy, 1881)**
Material: ZSM 500/0 from "Pastassathal Tal" [=Pastaza valley], Ecuador collected by "M. Wagner".
Catalogue name: "*Enyalioides praestabilis*".

[Iguanidae]

Ctenosaura similis **(Gray, 1831)**
Material: NMW 13090 from "Nicoya, Costa Rica" collected by "M. Wagner".
Catalogue name: "*Ctenosaura similis*".

Iguana iguana **(Linnaeus, 1758)**
Material: ZSM 539/0 from "Panama" [no further locality specified] collected by "M. Wagner"; ZSM 541/0 from "Mittelamerika" [=Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: "*Iguana tuberculata*".

[Lacertidae]

Acanthodactylus savignyi **Audouin, 1809**
Material: RMNH 3496 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Lacerta savignyi*".
Citation: None.
Remarks: This species is not mentioned by Schlegel (in Wagner 1841), but the specimen probably refer to the mentioned "*Lacerta pardalis* Lichtenstein 1823". Especially as Schlegel (in Wagner 1841, page 115) mentioned that he had many problems to identify this species and refer to it only because of its uncertain identidy. However, Schlegel (in Wagner 1841) also mentioned a series of specimens collected by Moritz Wagner but the whereabouts of other specimens remains unclear.

Darevskia praticola **(Eversmann, 1834)**
Material: ZFMK 21330 [ZMUG 21f] from "Tiflis" [=Tbilissi], Georgia collected by "M. Wagner" in 1847.
Catalogue name: "*Lacerta muralis* var. *chalybdea*" [ZMUG].
Citation: As "*Lacerta muralis* Latr." from "aus Grusien [Georgia] und von den Abhängen des Kaukasus" by Berthold (in M. Wagner 1850, p. 331).
Remarks: Berthold (in M. Wagner 1850) specified two specimens of the species but did not recognize a subspecific level. Most probably this is one of the mentioned vouchers. There are only two other "*Lacerta*" species mentioned: "*Lacerta oxycephala*" (see below) and *Lacerta strigata*, which are very different from *Darevskia*.

Mesalina guttulata **(Lichtenstein, 1823)**
Material: RMNH 3436 from "Oran, Algeria" collected by "M. Wagner".
Catalogue name: "*Lacerta guttata*".
Citation: As "*Lacerta guttulata*" by Schlegel (in M. Wagner 1841, part III, 113).
Remarks: Schlegel (in M. Wagner 1841) mentioned two specimens collected by Wagner which was the first record of this species for Algeria. The other specimen could be the Göttingen specimen, which is apparently lost (see below).

Parvilacerta parva **(Boulenger, 1887)**
Material: ZFMK 21229 [ZMUG 21g] from "Urmia," Iran collected by "M. Wagner" in 1847.
Catalogue name: "*Lacerta muralis*" [ZMUG].
Citation: As "*Lacerta muralis* Latr." from "aus Grusien [Georgia] und von den Abhängen des Kaukasus" by Berthold (in M. Wagner 1850, p. 331).
Remarks: Berthold (in M. Wagner 1850) mentioned two vouchers, but only one was located by us (see also remarks in *Darevskia praticola*). However, this species is not known from Lake Urmia today, but occurs in the Ararat region in Armenia which was also visited by Wagner.

Podarcis tauricus **(Pallas, 1814)**
Material: ZFMK 26521 [ZMUG 239a], ZFMK 21225 [ZMUG 21b], ZFMK 26522 [ZMUG 247d] from "Constantinople" [=Istanbul], Turkey collected by "M. Wag-

ner" collected by "M. Wagner" in "1847 [ZFMK 21225, ZFMK 26522]".
Catalogue name: "*Lacerta taurica*" [ZMUG 239a]; "*Lacerta muralis*" [ZMUG 21b]; "*Lacerta oxycephala*" [ZMUG 247d].
Citation: As "*Lacerta oxycephala* Schlegel" from "aus Grusien [Georgia] und von den Abhängen des Kaukasus" by Berthold (in Wagner 1850, p. 331); As "*Lacerta taurica* Pallas" from "von der türkisch-pontischen Küste" by Berthold (in Wagner 1850, p. 339).
Remarks: Berthold (in Wagner 1850) mentioned two vouchers of this species from the 'türkisch-pontischer Küste' (= southern coastal parts of the Black Sea), which likely resemble these specimens. Berthold (in Wagner 1850) pointed out that the voucher of *L. oxycephala* is a juvenile specimen with a snout-vent length of "3.6 zoll" [=inch] and a tail length of "2.4 zoll".

***Podarcis vaucheri* (Boulenger, 1905)**
Material: RMNH 3465 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Lacerta muralis*".
Citation: As "*Lacerta muralis*" by Schlegel (in M. Wagner 1841, part III, 113).
Remarks: Schlegel (in M. Wagner 1841) mentioned the species as common in coastal areas, but Wagner also encountered it in inland Algeria.

***Scelarcis perspicillata* (Duméril & Bibron, 1839)**
Material: RMNH 3827 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Lacerta perspicillata*".
Remarks: This species is not mentioned by Schlegel (in M. Wagner 1841).

***Timon pater* (Lataste, 1880)**
Material: RMNH 3501 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Lacerta ocellata*".
Citation: As "*Lacerta ocellata*" by Schlegel (in M. Wagner 1841, part III, 112).
Remarks: Wagner (1841) mentioned "*Lacerta ocellata*" as common along the coast between Oran and Bona, but also mentioned it from Belida, Constantine and Mascara in inland Algeria.

[Phrynosomatidae]
***Sceloporus acanthinus* Bocourt, 1873**
Material: ZSM 551/0 from "Mittel-Amerika" [=Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: "*Sceloporus acanthinus*".

***Sceloporus grammicus* Wiegmann, 1828**
Material: ZFMK 26788 [ZMUG 107a] from "Nord Amerika" [=North America, no further locality specified] collected by "M. Wagner" in 1853.
Catalogue name: "*Sceloporus grammicus*" [ZMUG].

***Sceloporus undulatus* (Bosc & Daudin, 1801)**
Material: ZSM 554/0 [2 ex.] from "Louisiana," USA collected by "M. Wagner".
Catalogue name: "*Sceloporus undulatus*".

[Phyllodactylidae]
***Tarentola mauritanica* (Linnaeus, 1758)**
Material: RMNH 2742 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Platydactylus fascicularis*".
Citation: As "*Platydactylus fascicularis*" by Schlegel (in M. Wagner 1841, part III, 108).
Remarks: Wagner (1841) mentioned the gecko as common between Bona and Oran. He describes olive trees as the preferred habitat where the specimens are found on the bark of old trees.

[Scincidae]
***Chalcides ocellatus* (Forsskål, 1775)**
Material: RMNH 2500 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Scincus ocellatus*".
Citation: As "*Scincus ocellatus*" by Schlegel (in M. Wagner 1841, part III, 120).
Remarks: Wagner (1841) mentioned the species was common in coastal areas between Bona and Oran (most commonly in the area around Mostaganem), but he found the specimens only between April and October. He described the habitat as a sandy area and found the specimens under stones and rocks.

***Chalcides chalcides* (Linnaeus, 1758)**
Material: RMNH 3667 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Scincus chalcides*".
Citation: As "*Seps chalcides*" by Schlegel (in M. Wagner 1841, part III, 121).
Remarks: Wagner (1841) mentioned the species as common in the vicinities of Algier, Bona and Oran, where he found the individuals in hollows but not under stones.

***Plestiodon fasciatus* (Linnaeus, 1758)**
Material: ZSM 831/0 [5 ex.] from "Louisiana," USA collected by "M. Wagner"; ZSM 2564/0 from "Florida," USA collected by "M. Wagner".
Catalogue name: "*Eumeces fasciatus*".

***Scincella lateralis* (Say, 1823)**
Material: ZSM 805/0 [4 ex.] from "Florida," USA collected by "Wagner".
Catalogue name: "*Leiolepisma laterale*".

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[Tropiduridae]

***Stenocercus guentheri* (Boulenger, 1885)**
Material: ZSM 522/0 [3 ex.] from "Pichincha" [=Pichincha Mountain near Quito], Ecuador collected by "M. Wagner".
Catalogue name: "*Liocephalus guentheri".*

Reptilia, Serpentes
[Boidae]

***Corallus hortulanus* (Linnaeus, 1758)**
Material: ZSM 1362/0 from "Mittel-Amerika" [=Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: „*Corallus cookei*"

[Colubridae]

***Atractus guentheri* (Wucherer, 1861)**
Material: ZSM 1949/0 from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: „*Atractus guentheri*"

***Coluber constrictor* Linnaeus, 1758**
Material: ZFMK 31702 [ZMUG 110b] from "Nord Amerika" [=North America, no further locality specified] collected by "M. Wagner" in 1854.
Catalogue name: "*Zamenis constrictor*" [ZMUG].
Remarks: In contrast to the other material of Wagner from North America, this voucher was collected or catalogued in 1854.

***Coluber flagellum* Shaw, 1802**
Material: NMW 26579 from "Costa Rica" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Masticophis flagellum".*
Remarks: If the specimen is correctly identified, it would be the first record for Costa Rica, which is very unlikely. Therefore, the specimen should re-identified.

***Coniophanes fissidens* (Günther, 1858)**
Material: NMW 27357 from "Costa Rica" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Coniophanes fissidens".*

***Dendrophidion dendrophis* (Schlegel, 1837)**
Material: ZSM 1616/0 [2 ex.] from "Ecuador" [no further locality specified] collected by "M. Wagner"..
Catalogue name: „*Ischnognathus occipitomaculatus*"

***Diaphorolepis wagneri* Jan, 1863**
Material: ZSM 2708/0 [holotype] from "Andes de l'Ecuador" [= Andes in Ecuador, no further locality specified] without further data.
Catalogue name: "*Diaphorolepis wagneri".*
Citation: As "*Diaphorolepis wagneri"* by Jan (1863, p. 98).
Remarks: Even that no collector is indicated, the locality and the fact that the species is named after Moritz Wagner suggest he was the collector.

***Dipsas andiana* (Boulenger, 1896)**
Material: ZSM 2278/0 from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: „*Sibynomorphus variegatus*".

***Eirenis modestus* Martin, 1838**
Material: ZFMK 31625 [ZMUG 234a] from "Tiflis" [=Tbilissi], Georgia collected by "M. Wagner" in 1846.
Catalogue name: "*Ablabes modestus"* [ZMUG].
Citation: As "*Coronella collaris* Berth." from "aus Grusien [Georgia] und von den Abhängen des Kaukasus" by Berthold (in M. Wagner 1850, p. 332).
Remarks: Berthold (in M. Wagner 1850) was the first author who assigned ‚*Coluber collaris*' as a species of the genus *Coronella*, but nevertheless, his identification of the specimen was wrong. He emended his own identification in the catalogue where the specimen is inventoried as *Ablabes modestus*. He described the pholidosis of the voucher as having 17 rows of rhomboidal smooth scales around midbody. Originally it was a series of three specimens but two of them are now lost.

***Farancia abacura* (Holbrook, 1836)**
Material: ZMB 1778 from "Centralamer[ika]" [Central America, no further locality specified] collected by "Wagener" [sic!].
Catalogue name: "*Calopisma abacurum".*
Remarks: According to the ZMB catalogue this specimen was collected by "Wagener", but the locality and the time of the inventory suggests that this refers to Moritz Wagner, whose name was apparently misspelled. The locality does not match the currently known distribution (eastern USA) of the species but probably Wagner recognized eastern Texas rather as Central America than as North America and therefore the locality could be correct and can be restricted to this region.

***Farancia erythrogramma* (Palissot de Beauvois, 1802)**
Material: ZSM 1905/0 from "Süd-Carolina [= South Carolina]," USA collected by "M. Wagner".
Catalogue name: „*Abastor erythrogrammus*".

***Hemorrhois hippocrepis* (Linnaeus, 1758)**
Material: RMNH 471 [2 ex.] from "Algeria" [no further locality specified] collected by "M. Wagner" in 1839.
Catalogue name: "*Coluber hippocrepis".*
Citation: As "*Coluber hippocrepis*" by Schlegel (in M. Wagner 1841, part III, 130).
Remarks: According to Wagner (1841) the species is common in southern Algeria where it is often found in houses.

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Imantodes cenchoa **(Linnaeus, 1758)**
Material: ZSM 30/0 from “Mittelamerika” [=Central America, no further locality specified] collected by “M. Wagner”; ZSM 2000/0 from “Pastassathal [=Pataza valley],” Ecuador collected by “M. Wagner”.
Catalogue name: “*Elaps ancoralis”* [ZSM 30/0]; „*Imantodes chenchoa*” [sic!] [ZSM 2000/0].

Imantodes gemmistratus **(Cope, 1861)**
Material: NMW 25528 from “Costa Rica” [no further locality specified] collected by “M. Wagner”.
Catalogue name: “*Imantodes gemmistratus”.*

Lampropeltis getula **(Linnaeus, 1766)**
Material: ZSM 1839/0 from “Florida,” USA collected by “M. Wagner”.
Catalogue name: „*Lampropeltis getula* var. *sayi*”.

Lampropeltis holbrooki **Stejneger, 1902**
Material: ZFMK 36445 [ZMUG 96c] from “Nord Amerika” [North America, no further locality specified] collected by “M. Wagner” in 1853.
Catalogue name: “*Coronella getula*” [ZMUG].
Remarks: The species is only recognized from west of the Mississippi which restricts the locality to this area of North America..

Lampropeltis triangulum **Lacépède, 1789**
Material: ZFMK 36837 [ZMUG 89b] from “Tennessee,” USA collected in 1853.
Catalogue name: “*Coronella triangulum*” [ZMUG].

Leptodeira annulata **(Linnaeus, 1758)**
Material: ZSM 2017/0, ZSM 2024/0 [4 ex.], ZSM 2025/0 from “Mittel-Amerika [= Central America, no further locality specified]” collected by “M. Wagner”.
Catalogue name: “*Leptodeira annulata albofusca*” [ZSM 2017/0]; „*Leptodeira annulata personata*” [ZSM 2024/0, ZSM 2025/0].

Macroprotodon cucullatus **(Geoffroy de St-Hilaire, 1827)**
Material: RMNH 212 [2 ex.] from “Alges” [=Algeria, no further locality specified] collected by “M. Wagner”.
Catalogue name: “*Coronella mauritanica”.*
Citation: ? As “*Coronella laevis*” by Schlegel (in M. Wagner 1841, part III, 129).
Remarks: The only *Coronella* which is mentioned by Schlegel (in M. Wagner 1841) is *C. laevis* from Algier, Bona and Constantine. Therefore, these specimens could be identical with the cited ones.

Mastigodryas boddaerti **(Seetzen, 1796)**
Material: NMW 18744 from “Costa Rica” [no further locality specified] collected by “M. Wagner”; ZSM 83/0 from “Mittelamerika” [= Central America, no further locality specified] collected by “M. Wagner”.
Catalogue name: “*Mastigodryas boddaerti”* [NMW 18744]; “*Drymobius boddaerti”* [ZSM 83/0].

Nerodia erythrogaster **Forster, 1771**
Material: ZFMK 33472 [ZMUG 75d] from “Nord Amerika [North America], Georgia”, USA collected in 1853.
Catalogue name: “*Tropidonotus fasciatus* var. *erythrogaster*” [ZMUG].
Remarks: No collector specified but the year and locality are consistent with Moritz Wagner being the collector.

Nerodia fasciata **(Linnaeus, 1766)**
Material: ZFMK 33474-478 [ZMUG 75a, 75b] from “Nord America” [=North America, no further locality specified] collected by “M. Wagner” in 1853; ZFMK 33479 [ZMUG 75c] from “Nord Amerika, Tennessee,” USA collected in 1853.
Catalogue name: “*Tropidonotus fasciatus*” [ZMUG 75a, 75b]; “*Tropidonotus fasciatus*” [ZMUG 75c].
Remarks: No collector is specified with the specimen ZFMK 33479 but the year and locality are consistent with Moritz Wagner being the collector.

Nerodia taxispilota **(Holbrook, 1838)**
Material: ZSM 1475/0 from “Florida,” USA collected by “M. Wagner”..
Catalogue name: „*Natrix taxispilotus*”

Oxybelis aeneus **(Wagler, 1824)**
Material: NMW 27266 from “Costa Rica” [no further locality specified] collected by “M. Wagner”.
Catalogue name: “*Oxybelis aeneus”.*

Opheodrys aestivus **(Linnaeus, 1766)**
Material: ZSM 1919/0 from “Süd-Carolina [= South Carolina],” USA collected by “M. Wagner”.
Catalogue name: „*Contia aestiva*”, „*Opheodrys aestiva*”.

Pituophis catenifer sayi **(Schlegel, 1837)**
Material: ZMB 2087 from “Nordamerika” [North America, no further locality specified] collected by “Wagener” [sic!].
Catalogue name: “*Coronella sayi”.*
Remarks: According to the ZMB catalogue this specimen was collected by “Wagener”, but the locality and the time of the inventory suggests that this refers to Moritz Wagner, whose name was apparently misspelled.

Platyceps **sp.**
Material: ZFMK 31706 [ZMUG 104e] from “Tiflis” [=Tbilissi] collected by “M. Wagner” in 1846.
Catalogue name:“*Zamenis gemonensis*“ [ZMUG].
Citation: As “*Coluber viridiflavus* Lacépède” from “aus

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Grusien [Georgia] und von den Abhängen des Kaukasus" by Berthold (in M. Wagner 1850, p. 334).
Remarks: Berthold (in M. Wagner 1850) mentioned a juvenile ‚*Coluber viridiflavus*', which is most probably identical with the specimen *Zamenis gemonensis* in the catalogue of the Zoologisches Museum (ZMUG). He described his voucher as having 15 rows of smooth scales around midbody, 171 ventralia and 102 subcaudalia. It has so far not been possible to identify this specimen at the species level, but it is most similar and probably identical with *P. najadum*.

Regina regida **(Say, 1825)**
Material: ZSM 1471/0 from "Florida, Amerika [=USA]" collected by "M. Wagner".
Catalogue name: „*Natrix rigidus*"

Regina septemvittata **(Say, 1825)**
Material: ZFMK 33468 [ZMUG 77] from "Nord Amerika [=North America], Georgia", USA collected in 1853; ZSM 1470/0 from "Florida, Amerika [=USA]" collected by "M. Wagner".
Catalogue name: "*Tropidonotus septemvittatus*" [ZMUG 77], „*Natrix septemvittatus*" [ZSM 1470/0].
Remarks: In the ZFMK specimen no collector is specified but the year and locality are consistent with Moritz Wagner being the collector.

Storeria dekayi **(Holbrook, 1836)**
Material: ZSM 1530/0 from "Florida," USA collected by "M. Wagner"; ZFMK 33518 [ZMUG 76] from "Nord Amerika" [=North America, no further locality specified] collected by "M. Wagner" in 1853.
Catalogue name: „*Ischnognathus dekayi*" [ZSM]; "*Tropidonotus cyclopium* [sic!]" [ZMUG].

Telescopus fallax iberus **Eichwald, 1831**
Material: ZFMK 31731 [ZMUG 47a] from "Tiflis" [=Tbilissi], Georgia collected by "M. Wagner" in 1846.
Catalogue name: "*Tarbophis savignyi*" [ZMUG].
Citation: As "*Dipsas fallax* Schlegel" from "Tiflis" by Berthold (in M. Wagner 1850, p. 334); as "*Trigonophis iberus* Eichwald" from "Tiflis" by Berthold (in M. Wagner 1850, p. 334).
Remarks: Berthold (in M. Wagner 1850) specified the voucher as '*Dipsas fallax* Schlegel' but also mentioned ‚*Trigonophis iberus*' as synonym. It can be assumed that this voucher is identical with the one described by Berthold. As pholidosis he mentioned 13 rows of smooth scales around midbody, 235 ventral- and 66 subcaudal scales. Additionally he described the voucher as: body depressed; head broader than neck; pupil vertical; head scales short; occiput scales rounded and short; two postocular and no praeocular scale; body scales lanceolate, small and smooth. The coloration was cinereous with dark oblique markings, bordered upwards by pale dots, belly marbled blue.

Thamnophis sauritus **(Linnaeus, 1758)**
Material: ZSM 1416/0 [3 ex.], ZSM 2596/0 from "Florida," USA collected by "M. Wagner".
Catalogue name: „*Tropidonotus saurita*" [ZSM 1416/0]; „*Thamnophis sauritus sackenii*" [ZSM 2596/0].

Tropidodipsas fasciata **Günther, 1858**
Material: NMW 19872 from "Nicaragua" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Sibon fasciata".*

Xenodon rabdocephalus **(Wied, 1824)**
Material: ZSM 1818/0 from "Mittel-Amerika" [=Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: „*Xenodon colubrinus*".

[Elapidae]
Micrurus latifasciatus **Schmidt, 1933**
Material: ZSM 2263/0 [paratype] from "Nordamerika" [=North America, no further locality specified] collected by "M. Wagner".
Catalogue name: "*Micrurus latifasciatus".*
Citation: As "*Micrurus latifasciatus"* by Schmidt (1933).
Remarks: The locality is mentioned as erroneous in Franzen & Glaw 2007.

Micrurus multifasciatus hertwigi **(Werner, 1897)**
Material: ZSM 2268/0 [holotype] from "Mittelamerika" [=Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: "*Elaps hertwigii."*
Citation: As "*Elaps hertwigii*" by Werner (1897b).

Pelamis platura **(Linnaeus, 1766)**
Material: ZSM 2191/0 from "Panama" [no further locality specified] collected by "M. Wagner".
Catalogue name: „*Hydrus platurus*"

[Psammophiidae]
Malpolon monspessulanus **(Herrman, 1804)**
Material: RMNH 730 from "Algeria" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Psammophis lacertina".*
Citation: As "*Psammophis lacertina*" by Schlegel (in M. Wagner 1841, part III, 131).

[Viperidae]
Agkistrodon contortrix **(Linnaeus, 1766)**
Material: ZFMK 32527-528 [ZMUG 219c] from "Nord Amerika" [=North America, no further locality specified] collected by "M. Wagner" in 1853.
Catalogue name: "*Ancistrodon lebetina*" [ZMUG].

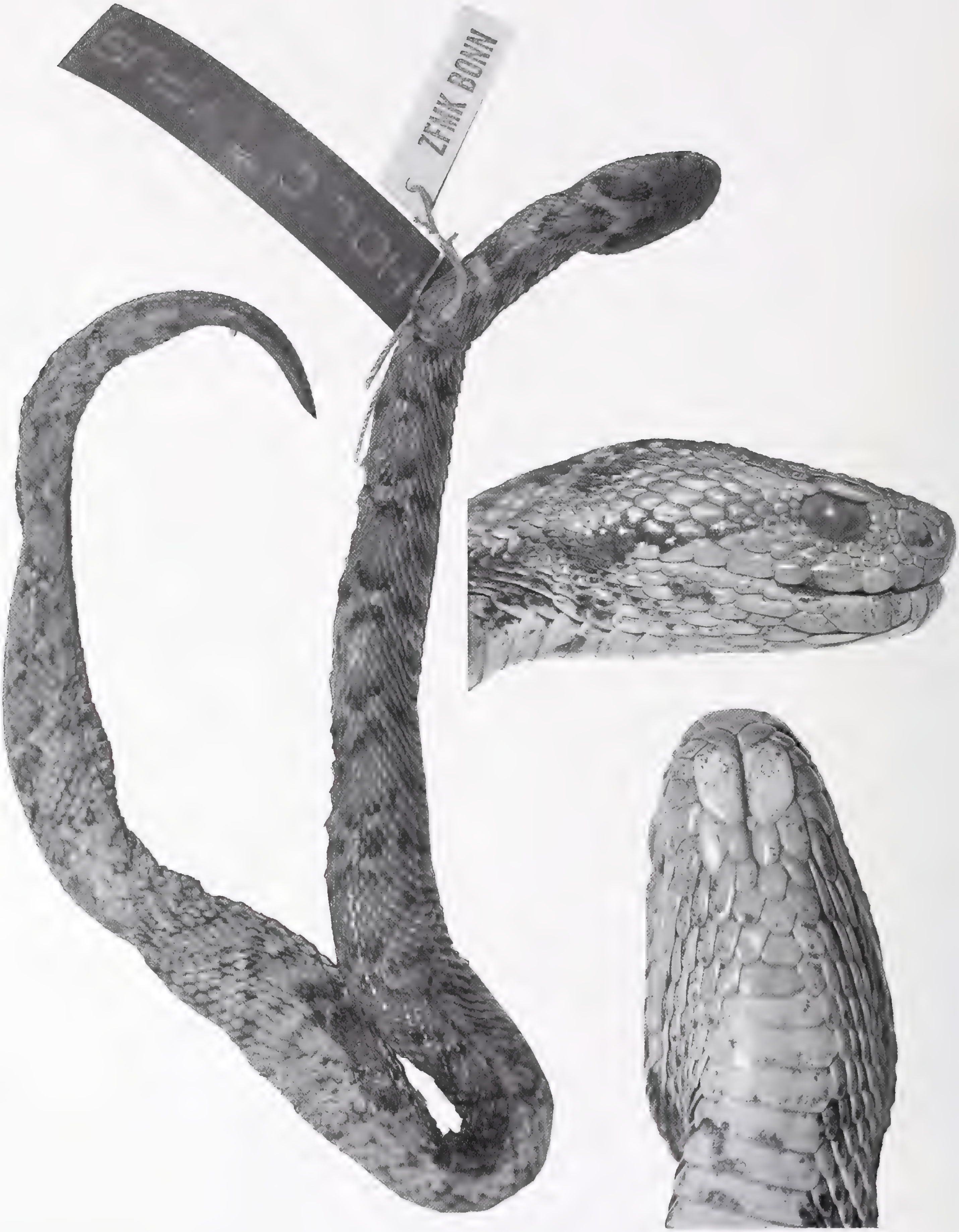

Fig. 4. Holotype of *Vipera wagneri* Nilson & Andrén, 1984 collected by Moritz Wagner.

***Agkistrodon piscivorus* (Lacépède, 1789)**
Material: ZSM 2327/0 from "Florida," USA collected by "M. Wagner".
Catalogue name: „*Agkistrodon piscivorus*"

***Bothriechis schlegelii* (Berthold, 1846)**
Material: NMW 28002 from "Costa Rica" [no further locality specified] collected by "M. Wagner"; ZSM 2363/0 from "Panama" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Bothriechis schlegelii"* [NMW 28002]; „*Bothrops schegeli*" [ZMS 2363/0].

***Bothrops lanceolatus* (Bonnaterre, 1790)**
Material: ZSM 2339/0 from "Mittel-Amerika [= Central America, no further locality specified],"collected by "M. Wagner".
Catalogue name: „*Bothrops lanceolatus*".

***Montivipera wagneri* (Nilson & Andrén, 1984)**
Material: ZFMK 32495 [ZMUG 233a] [holotype], "Urmia," Iran collected by "M. Wagner" in 1846.
Catalogue name: "*Vipera lebetina*" [ZMUG].
Citation: As "*Vipera aspis* Merr[em] (Varietas: *V. occellata*, Latr[eile])" from "von der armenisch-persischen Grenze" [= from the border between Armenia and Iran] by Berthold (in M. Wagner 1850, p. 337); as "*Vipera xanthina*" by Strauch (1869); as "*Vipera wagneri*" by Nilson & Andrén (1984).
Remarks: As mentioned above, Berthold (in M. Wagner 1850: 337) mentioned this specimen as variety *ocellata* of *Vipera aspis*, but later, he inventoried it as *V. lebetina*. It was later seen by Strauch (1869) and who cited it as if Berthold was the author of the taxonomic name *ocellata*, and identified it as synonym of *V. xanthina*. Nilson & Andren (1984) were therefore correct to describe it as a new species, *Vipera wagneri*, closely related to *V. xanthina*. Later, this group was accommodated in its own genus *Montivipera* (Nilson et al. 1999). Nevertheless, the description of the pholidosis by Berthold (in M. Wagner 1850) is not identical with the description of the holotype (Fig. 4), but it must be assumed that the mentioned specimens are identical. From the recent distribution of the species it seems obvious that "Urmia" as the locality mentioned in the catalogue is incorrect and the locality published by Berthold (in M. Wagner 1850) "von der armenisch-persischen Grenze" seems to be more likely.

***Porthidium lansbergi* (Schlegel, 1841)**
Material: NMW 28392 from "Costa Rica" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Porthidium lansbergi"*.
Citation: None.

***Porthidium nasutum* (Bocourt, 1868)**
Material: NMW 28398 from "Costa Rica," [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Porthidium nasutum"*.

Material lost or apparently lost at the ZSM & ZMUG collections

Specimens are listed under their current name based on the last catalogue entry. In many cases the mentioned material must be recognized as lost, but some material, particularly from the ZSM collection, may still be extant and this should be clarified in the future. The reason for the loss of specimens in the ZMUG collection is unknown but was documented during two inventories of the collection in the 1960s and 1970s. The material in the ZSM collection was lost because of bombing during the Second World War, but it is possible that some of the specimens are still available.

Amphibia

Amphibia, Caudata

[Ambystomidae]

***Ambystoma jeffersonianum* (Green, 1827)**
Material: ZMUG 41a [lost] from "Nord Amerika" [=North America, no further locality specified] collected in 1856.
Catalogue name: "*Ambystoma jeffersonianum*".
Remarks: At the second inventory of the ZMUG collection in 1970 the specimen was present but it seems to have been lost subsequently.

***Ambystoma tigrinum* (Green, 1825)**
Material: ZMUG 11b, 11g [2 ex.] [lost] from "Nord Amerika" [=North America, no further locality specified] collected in 1856.
Catalogue name: "*Ambystoma tigrinum*".
Remarks: For neither voucher is a collector mentioned but the date and locality are consistent with M. Wagner. At the second inventory of the ZMUG collection in 1970 the specimen was still present but it is now apparently lost.

[Plethodontidae]

***Bolitoglossa palmata* (Werner, 1897)**
Material: ZSM 1272/0 [2 ex, paralectotypes] [lost] from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Oedipus palmatus*"
Citation: As "*Spelerpes palmatus*" by Werner (1897b).
Remarks: NMW 22862 was designated as lectotype by Brame & Wake (1962: 173).

***Eurycea longicauda* (Green, 1818)**
Material: ZMUG 4a [lost] from "Tennessee, North America" collected in 1853.
Catalogue name: "*Spelerpes longicauda*".
Remarks: In the catalogue determined without a collector but date and locality are consistent with other material collected by M. Wagner.

***Plethodon cinereus* (Green, 1818)**
Material: ZSM 1276/0 [8 ex., apparently lost] from "Wisconsin," USA collected by "M. Wagner".
Catalogue name: "*Plethodon erythronotus*"; "*Plethodon cinereus*".

***Pseudotriton montanus* Baird, 1850**
Material: ZMUG 7d [lost] from "Tennessee," USA collected in 1853.
Catalogue name: "*Spelerpes ruber* var. *montana*".
Remarks: In the catalogue no collector is added but date and place refer to M. Wagner. At the time of the second inventory of the collection in 1970 the voucher was still present but it has been lost subsequently.

***Pseudotriton ruber* (Sonnini de Manoncourt and Latreille, 1801)**
Material: ZSM 1264/0 [apparently lost] from "Nord-Amerika" [= North America, no further locality specified] collected by "M. Wagner".
Catalogue name: "*Pseudotriton ruber*".

[Salamandridae]
***Notophthalmus viridescens* (Rafinesque, 1820)**
Material: ZSM 1239/0 [4 ex, lost], from "Wisconsin," USA collected by "M. Wagner".
Catalogue name: "*Triturus viridescens*".

***Triturus karelini* Strauch, 1870**
Material: ZMUG 16d [lost] from "Constantinopel" [=Istanbul], Turkey collected by "M. Wagner".
Catalogue name: "*Triturus cristatus*".
Remarks: Berthold (in Wagner 1850) reported '*Triton taeniatus*' and ,*Triton nycthemerus*' from the 'türkisch-pontischen Küste' (southern coastal parts of the Black Sea). However, no vouchers are preserved and it is not possible to determine if this was additional material or a correct identified voucher. But 'cf. Woltersdorff [sic!] 1907' is noted handwritten in the catalogue, so it is most probably a correctly identified specimen. At the time of the second inventory of the ZMUG collection in 1970 the voucher was still present but it has since been lost.

Amphibia, Anura
***Hylodes* spec.**
Material: ZSM 1048/0 [status unclear] from "Pastassathal [Pastaza valley]," Ecuador" collected by "M. Wagner".
Catalogue name: "*Hylodes* spec.".
Citation: None.
Remarks: Today the genus *Hylodes* Fitzinger 1826 includes 24 species, but non of them occur in Ecuador. Therefore, the specimen identity remain unclear.

[Bufonidae]
***Atelopus ignescens* (Cornalia, 1849)**
Material: ZSM 1014/0 [7 ex., apparently lost] from "Pichincha," Ecuador collected by "M. Wagner".
Catalogue name: "*Atelopus laevis*".

***Atelopus longirostris* (Cope, 1868)**
Material: ZSM 1018/0 [apparently lost] from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Atelopus longirostris*".

***Atelopus varius* (Lichtenstein & Martens, 1856)**
Material: ZSM 1016/0 [apparently lost] from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Atelopus varius*".

***Bufo variabilis* Pallas, 1769**
Material: ZMUG 65ba [lost] from "Tiflis" [=Tbilissi], Georgia collected by "M. Wagner" in 1846.
Catalogue name: "*Bufo virdis*".
Remarks: Berthold (in M. Wagner 1850) indeed mentioned one juvenile voucher of this taxon but with the locality 'türkisch-pontischer Küste' (= southern coastal parts of the Black Sea), but as recognized from present vouchers, the catalogue locality is often more precise than the locality given by Berthold (in M. Wagner 1850).

***Rhinella crucifer* (Wied-Neuwied, 1821)**
Material: ZSM 2653/0 [apparently lost] from "Mittel-Amerika [=Central America, no further locality specified]," collected by "M. Wagner".
Catalogue name: "*Bufo crucifer*".

[Dendrobatidae]
***Dendrobates tinctorius* (Cuvier, 1797)**
Material: ZSM 1010/0 [apparently lost] from "Chiriqui, Central Am[erika] [=Panama]" collected by "M. Wagner".
Catalogue name: "*Dendrobates tinctorius*".

[Hemiphractidae]
***Gastrotheca marsupiata* (Duméril & Bibron, 1841)**
Material: ZSM 1187/0 [3 ex., apparently lost] from "Pichincha," Ecuador collected by "M. Wagner".
Catalogue name: "*Gastrotheca marsupiata*".

[Hylidae]
***Hyla arborea* (Linnaeus, 1758)**
Material: ZMUG 88a [lost] from "Algier," [=Algeria, no further locality specified] collected by "M. Wagner".

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Catalogue name: "*Hyla arborea*".
Citation: As "*Hyla arborea*" by Schlegel (in M. Wagner 1841, p. III, 133).

Hyla cinerea **(Schneider, 1799)**
Material: ZSM 1165/0 [apparently lost] from "Louisiana," USA collected by "M. Wagner".
Catalogue name: "*Hyla carolinensis*".

Hypsiboas albomarginatus **(Spix, 1824)**
Material: ZSM 2500/0 [apparently lost] from "Pastassathal [Pastaza valley]," Ecuador collected by "M. Wagner".
Catalogue name: "*Hyla albomarginata*".

Hypsiboas geographicus **(Spix, 1824)**
Material: ZSM 1154/0 [apparently lost] from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: "*Hyla* aff. *cryptomelas*".

Trachycephalus typhonius **(Linnaeus, 1758)**
Material: ZSM 1148/0 [apparently lost] from "Ecuador" [no further locality specified] collected by "M. Wagner"; ZSM 2492/0 [3 ex., ? apparently lost] from "Panama" collected by "M. Wagner".
Catalogue name: "*Bufo typhonius*".

[Leptodactylidae]
Leptodactylus wagneri **(Peters, 1862)**
Material: ZSM 1080/0 [holotype] [lost] from "Pastassathal" [=Pastaza valley], Ecuador collected by "M. Wagner".
Catalogue name: "*Plectromantis wagneri*"
Citation: As "*Plectromantis wagneri*" by Peters (1862).
Remarks: According to the original description, the type locality is "an der Westseite der Anden in Ecuador" [= on the western side of the Andes in Ecuador].

[Microhylidae]
Gastrophryne carolinensis **(Holbrook, 1835)**
Material: ZSM 1024/0 [apparently lost] from "Wisconsin," USA collected by "M. Wagner".
Catalogue name: "*Engystoma carolinense*".
Remarks: This species does not occur in Wisconsin.

[Ranidae]
Lithobates pipiens **(Schreber, 1782)**
Material: ZSM 984/0 [2 ex., apparently lost] from "Wisconsin," USA collected by "M. Wagner".
Catalogue name: "*Rana halecina brachycephala*"; "*Rana pipiens*"

Pelophylax **kl.** ***esculentus*** **(Linnaeus, 1758)**
Material: ZMUG 13c [lost] from "Urmia," Iran collected by "M. Wagner" in 1846.
Catalogue name: "*Rana esculenta*".
Citation: As "*Rana esculenta* Linnaeus" by Berthold (in M. Wagner 1850, p. 337); as "*Rana tigrina* Eichwald non *R. tigrina* Daudin" by Berthold (in M. Wagner 1850, p. 337).
Remarks: Berthold (in M. Wagner 1850) gives a detailed description of the voucher and mentioned that, apart from the coloration, the specimen was typical of *Rana esculenta*. At the same time he synoymized *Rana caucasica* Pallas, 1814 [currently a synonym of *Pelophylax ridibundus* (Pallas, 1771)] with *Rana esculenta* and noted that this taxon is a *Rana* s. str. and not a taxon within the genus *Bufo* as mentioned by Ménétriés (1832) and Eichwald (1831). At the second inventory of the ZMUG collection in 1970 the voucher was still present but it was subsequently lost.

[Scaphiopodidae]
Scaphiopus holbrookii **Harlan, 1835**
Material: ZMUG 39a [lost] from "Georgia," USA collected in 1853.
Catalogue name: "*Scaphiopus solitarius*".
Remarks: In the ZMUG catalogue no collector is listed, but the date and locality are consistent with other material collected by M. Wagner.

[Strabomantidae]
Pristimantis chalceus **(Peters, 1873)**
Material: ZSM 1045/0 [2 ex., syntypes] [lost] from "Pastassathal [=Pastaza valley, Ecuador]" collected by "M. Wagner".
Catalogue name: "*Phyllobatus chalceus*".
Citation: As "*Phyllobates chalceus*" by Peters (1873); as "*Eleutherodactylus chalceus*" by Glaw & Franzen (2006).
Remarks: In the original description three (type) specimens are mentioned, but according to Glaw & Franzen (2006) only two are listed in the ZSM catalogue. The third specimen is extant in Berlin as ZMB 7814 (Bauer et al. 1995: 46).

Reptilia, Testudinae
[Emydidae]
Malaclemys terrapin pileata **(Wied, 1865)**
Material: ZSM 2508/0 [apparently lost] from "Nord-Amerika" [= North America, no further locality specified] collected by "M. Wagner".
Catalogue name: „*Malaclemys pileata*"

[Kinosternidae]
Kinosternon subrubrum **(Bonnaterre, 1789)**
Material: ZMUG 29c [lost] from "Nordamer[ika]" [=North America, no further locality specified] collected in 1853; ZSM 2376/0 [? apparently lost] from "Nord-Amerika" [= North America, no further locality specified] collected by "M. Wagner".
Catalogue name: "*Cinosternum pennsylvanicum*" [ZMUG 29c]; „*Nicoria punctularia*" [ZSM 2376/0].

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Remarks: The ZMUG specimen is an apparently lost stuffed voucher. The fluid collection only was transferred from Göttingen to Bonn and therefore this specimen could still be present in the public exhibition of the Zoological Museum in Göttingen, but this needs to be clarified.

[Geoemydidae]

***Mauremys caspica* (Gmelin, 1774)**

Material: ZMUG 16a [lost] from “Tiflis” [=Tbilissi], Georgia collected by “M. Wagner” in 1846.

Catalogue name: „ *Clemmys caspia*”.

Remarks: Berthold (in M. Wagner 1850) referred to two individuals with ‘sehr schönen Flammenlinien’. However, the catalogue of the museum lists only one voucher.

***Rhinoclemmys punctularia* (Daudin, 1801)**

Material: ZSM 88/0 [apparently lost] from “Centralamerika” [= Central America, without further locality] collected by “M. Wagner”.

Catalogue name: „*Nicoria punctularia*”.

Reptilia, Sauria

[Agamidae]

***Trapelus sanguinolentus* (Pallas, 1814)**

Material: ZMUG 151a [lost] from “Tiflis” [=Tbilissi], Georgia collected by “M. Wagner” in 1846.

Catalogue name: „ *Agama sanguinolenta*”.

Citation: As “*Trapelus sanguinolutus* Eichwald” from “aus Grusien und von den Abhängen des Kaukasus“ by Berthold (in Wagner 1850, p. 330).

Remarks: Berthold (in Wagner 1850) indicated two individuals of which only one has the characteristic striped throat of the species. At the first inventory of the ZMUG collection in 1968 the voucher was still present but it has apparently been lost.

[Dactyloidae]

***Anolis carolinensis* Voigt, 1832**

Material: ZMUG 99a–c [3 ex., lost] from “Nord Amerika” [=North America, no further locality specified] collected by “M. Wagner” in 1853; ZSM 470/0 [many ex.; ? apparently lost] from “Louisiana” collected by “M. Wagner”.

Catalogue name: “*Anolis carolinensis*”.

Remarks: At the time of the inventory of the collection in 1968 all vouchers were still present but they were subsequently lost.

[Lacertidae]

***Mesalina guttulata* (Lichtenstein, 1823)**

Material: ZMUG 29°, ZMUG 29b [2 ex., lost] from „Algerien“ [= Algeria, no further locality specified] donated by the „Zool[ogisches] Inst[itut]”.

Catalogue name: “*Eremias guttata* ”.

Citation: As “*Lacerta guttulata*” by Schlegel (in M. Wagner 1841, part III, 113).

Remarks: No collector or date is specified with this specimen, but the locality and the circumstance that it was a donation of the Zoological Institute (where Rudolf Wagner was the head) points to Moritz Wagner.

[Scincidae]

***Plestiodon fasciatus* (Linnaeus, 1758)**

Material: ZMUG 66c [lost] from “Nord Amerika” [=North America, no further locality specified] collected by “M. Wagner” in 1853.

Catalogue name: “*Eumeces quinquelineatus*”.

***Scincella lateralis* (Say, 1823)**

Material: ZSM 806/0 [4 ex., apparently lost] from “Wisconsin,” USA collected by “Wagner”.

Catalogue name: “*Lygosoma* (*Leiolepisma*) *laterale*”.

Remarks: This species does not occur in Wisconsin.

[Teiidae]

***Ameiva praesignis* (Baird & Girard, 1852)**

Material: ZSM 1930/0 [apparently lost] from “Mittel-Amerika” [=Central America, no further locality specified] collected by “M. Wagner”.

Catalogue name: „*Ameiva ameiva praesignis*”

***Aspidoscelis sexlineata* (Linnaeus, 1766)**

Material: ZMUG 17a [lost] from “Nord Amerika” [=North America, no further locality specified] collected by “M. Wagner” in 1853.

Catalogue name: „ *Cnemidophorus sexlineatus*”.

Remarks: At the time of the inventory of the collection in 1968 the voucher was still present but it is considered to have been lost since that time.

Reptilia, Serpentes

[Colubridae]

***Atractus occipitoalbus* (Jan, 1863)**

Material: ZSM 1375/0 [holotype] [lost] from “Ecuador” [no further locality specified] collected by “M. Wagner”.

Catalogue name: „ *Atractus occipitoalbus*”.

Remarks: According to the original description the type locality is “Andes de l’Ecuador, 4000 ft.” [=Andes of Ecuador, 4000 ft.].

***Clelia clelia* (Daudin, 1803)**

Material: ZSM 2664/0 [2 ex., apparently lost] from “Ecuador” [no further locality specified] collected by “M. Wagner”..

Catalogue name: „*Pseudoboa clelia*”

***Coluber constrictor* Linnaeus, 1758**

Material: ZMUG 110a [lost] from “Nord Amerika” [=North America, no further locality specified] collected by “M. Wagner” in 1854.

Catalogue name: „*Zamenis constrictor*”.

Remarks: In contrast to the other North American material of the Wagner collection this voucher was collected in 1854.

***Coronella austriaca* Laurenti, 1768**
Material: ZMUG 50d [lost] from "Tiflis" [=Tbilissi], Georgia collected by "M. Wagner" in 1846, and later "ded. Strauch".
Catalogue name: „*Coronella austriaca*".
Citation: As "*Coronella laevis* Boie" from "aus Grusien und von den Abhängen des Kaukasus" by Berthold (in M. Wagner 1850, p. 332).
Remarks: Berthold (in M. Wagner 1850) refers to two specimens of '*Coronella laevis*' but mentioned that they rather should be determined as ‚*Coronella cupreus*'. He specified 13 scale rows around midbody, 171 ventral body and 50 ventral paired tail scales. The coloration was greenish-gray to copper, with a metallic glossiness. He mentioned a small stripe between eye and neck and a dark blotch, followed by dark sports behind every occiput scale.

***Dipsas catesbyi* (Sentzen, 1796)**
Material: ZSM 2279/0 [apparently lost] from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: „*Sibynomorphus catesbyi*".

***Elaphe guttata* (Linnaeus, 1766)**
Material: ZMUG 88b [lost] from "Nord Amerika" [=North America, no further locality specified] collected by "M. Wagner" in 1853.
Catalogue name: „ *Coluber guttatus*".

***Imantodes gemmistratus* (Cope, 1861)**
Material: ZSM 30/0 [holotype] [lost] from "Mittel-Amerika" [=Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: „*Himantodes cenchoa* var. *elegans*"
Citation: As „*Himantodes cenchoa* var. *elegans*" from "Amérique central" by Jan and Sordelli (1871).
Remarks: This is the holotype of *Himantodes cenchoa* var. *elegans* Jan in Jan & Sordelli, 1871, which is today recognized as a synonym of *I. gemmistratus*.

***Leptophis ahaetulla occidentalis* (Günther, 1859)**
Material: ZSM 1795/0 [apparently lost] from "Mittel-Amerika" [=Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: „*Leptophis occidentalis*"

***Liophis epinephelus* (Cope, 1862)**
Material: ZSM 1783/0 [2 ex., apparently lost] from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: „*Leimadophis albiventris*"

***Mastigodryas boddaerti* (Sentzen, 1796)**
Material: ZSM 83/0 [apparently lost] from "Mittelamerika" [=Central America, no further locality specified] collected by "M. Wagner".
Catalogue name: „*Drymobius boddaerti* (Sentz)"

***Natrix natrix persa* Pallas, 1814**
Material: ZMUG 67k [lost] from "Urmia," Iran collected by "M. Wagner" in 1846.
Catalogue name: „ *Tropidonotus natrix* var. *persa*".
Citation: As „*Tropidonotus natrix* Kuhl" from "von der armenisch-persischen Grenze" by Berthold (in M. Wagner 1850, p. 337).
Remarks: Berthold (in M. Wagner 1850) described this specimen in detail and used this voucher to downgrade ‚*Tropidonotus persa*', viewed as a full species by Eichwald (1831), to a subspecies of *Natrix natrix*.

***Natrix tessellata* (Laurenti, 1768)**
Material: ZMUG 69c [lost] from "Tiflis" [=Tbilissi], Georgia collected by "M. Wagner" in 1846.
Catalogue name: „ *Tropidonotus tessellates*".
Citation: As "*Tropidonotus tessellatus* Boje" from "aus Grusien [Georgia] und von den Abhängen des Kaukasus [and the mounatin slopes of the Caucasus]" by Berthold (in M. Wagner 1850, p. 335).
Remarks: Berthold (in Wagner 1850) mentioned one voucher of this taxon with 17 keeled scale rows around midbody, 175 ventral body and 60 ventral tail scales. The coloration was described as leaf green on the upper side and yellow and black on the ventral side. This voucher is most probably the specimen mentioned by Berthold. Nevertheless, it has apparently been lost since 1968.

***Nerodia cyclopion* (Duméril, Bibron & Duméril, 1854)**
Material: ZMUG 76 [lost] from "Nord Amerika" [=North America, no further locality specified] collected by "M. Wagner" in 1853.
Catalogue name: „ *Thamnophis cyclopium*".

***Opheodrys vernalis* (Harlan, 1827)**
Material: ZSM 1913/0 [apparently lost] from "Florida," USA collected by "M. Wagner".
Catalogue name: „*Contia vernalis*".

***Oxyrhopus petolarius* (Linnaeus, 1758)**
Material: ZSM 2060/0 [apparently lost] from "Ecuador" [no further locality specified] collected by "M. Wagner"; ZSM 2063/0 [apparently lost]; ZSM 2065/0 [apparently lost] from "Mittel-Amerika [Central America, no further locality specified]" collected by "M. Wagner"; ZSM 2673/0 [apparently lost] from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: „*Clelia petola*" [ZSM 2060/0, ZSM 2063/0, ZSM 2065/0]; „*Pseudoboa petola*" [ZSM 2063/0, ZSM 2065/0]; „*Pseudoboa petola*" [ZSM 2673/0].

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Sibon nebulata **(Linnaeus, 1758)**
Material: ZSM 2606/0 [2 ex., apparently lost] from "Mittel-Amerika [= Central America, no further locality specified]" collected by "M. Wagner".
Catalogue name: „*Petalognathus nebulosus*"

Sistrurus miliarius **Linnaeus, 1766**
Material: ZMUG 216a, ZMUG 216b [2 ex., lost] from "Nord Amerika" [=North America, no further locality specified] collected in 1854.
Catalogue name: „*Sistrurus miliarius*"
Remarks: In the old catalogue the collector is not named, but locality and date agree with Moritz Wagner.

Storeria occipitomaculata **(Storer, 1839)**
Material: ZSM 1538/0 [apparently lost] from "Florida," USA collected by "M. Wagner"..
Catalogue name: „*Ischnognathus occipitomaculatus*"

Tantilla melanocephala **(Linnaeus, 1758)**
Material: ZSM 2172/0 [apparently lost] from "Mittel-Amerika [= Central America, no further locality specified]" collected by "M. Wagner".
Catalogue name: „*Tantilla melanocephala*"

Thamnophis sauritus **(Linnaeus, 1758)**
Material: ZSM 81/0 [apparently lost] from "Florida," USA collected by "M. Wagner".
Catalogue name: „*Tropidonotus saurita*".

Thamnophis sirtalis **(Linnaeus, 1758)**
Material: ZMUG 82c–e [3 ex., lost] from "Nord Amerika" [=North America, no further locality specified] collected by "M. Wagner [see remarks]" in 1853; ZSM 86/0 [apparently lost] from "Südcarolina" [= South Carolina], USA collected by "M. Wagner".
Catalogue name: "*Thamnophis ordinatus*" [ZMUG 82c–e]; „*Tropidonotus ordinates* var. *sirtalis*" [ZSM 86/0]
Remarks: In the ZMUG catalogue the collector's name for voucher 82c is lacking but date and locality indicate M. Wagner as collector. Specimen ZMUG 82e was recognized by a student in Göttingen in 1968, but it has been missing since that time. *Thamnophis ordinatus* was described by Linnaeus in 1766 as *Coluber ordinatus*, but later recognized as subspecies of *T. sirtalis* by Cope (1900) and by subsequent authors as a color phase (e.g., Rossman 1965)

Xenodon rabdocephalus **(Wied-Neuwied, 1824)**
Material: ZSM 1824/0 [apparently lost] from "Pastassa [=Pastaza valley]," Ecuador collected by "M. Wagner".
Catalogue name: „*Xenodon rabdocephalus*".

Zamenis longissimus **(Laurenti, 1768)**
Material: ZMUG 86c [lost] from "Tiflis" [=Tbilissi], Georgia collected by "M. Wagner" in 1846.
Catalogue name: „*Coluber longissimus* ".
Citation: As "*Coluber aesculapii* Shaw" from "aus Grisien und von den Abhängen des Kaukasus" by Berthold (in M. Wagner 1850, p. 333).
Remarks: Berthold (in M. Wagner 1850) mentioned '*Coluber aesculapii*' with 21 scale rows around midbody, 206 ventral body and 78 ventral tail scales. This voucher has apparently been lost since 1968.

[Elapidae]
Micrurus ancoralis **(Jan in Jan & Sordelli, 1872)**
Material: ZSM 210/0 [holotype] [lost] from "Ecuador" [no further locality specified] collected by "M. Wagner".
Catalogue name: "(*Elaps*) *ancoralis*".
Citation: As "*Elaps Marcgravii* var. *ancoralis*" by Jan and Sordelli (1872).

Micrurus fulvius **(Linnaeus, 1766)**
Material: ZSM 2263/0 [apparently lost] from "Nord Amerika [= North America, no further locality specified]", ZSM 2266/0 [apparently lost] from "Florida," USA collected by "M. Wagner".
Catalogue name: „*Micrurus fulvius nigrocinctus*" [ZSM 2263/0]; "*Micrurus fulvius*" [ZSM 2266/0]

Questionable Material

There is some doubtful material available from the ZSM collection. In most of the material a collector is not specified and locality is not mentioned in other catalogue entries together with Moritz Wagner as collector, but the catalogue entry is together within a series of entries of material collected by M. Wagner or immediately following such a series. Furthermore, this material was collected at localities which usually refer to Wagner material, or it is from localities Wagner visited during his travels. If the material is not lost (as indicated in the material section), further examination is needed to clarify the status of this material.

[Plethodontidae] ***Plethodon cinereus*** **(Green, 1818)**
Material: ZSM 1277/0 from "Philadelphia," Pennsylvania, USA; ZSM 1278/0 [8 ex., apparently lost] from "New York," USA; ZSM 1279/0 [apparently lost] from "Nord-Amerika" [= North America, without further locality].
Catalogue name: "*Plethodon erythronotus*"; "*Plethodon cinereus*".

[Plethodontidae] ***Pseudotriton ruber*** **(Sonnini de Manoncourt and Latreille, 1801)**
Material: ZSM 1266/0 [Status unclear] from "Nord-Amerika" [= North America, without further locality]; ZSM 1265/0 [4 ex., apparently lost], ZSM 1267/0 [2 ex.] from "Philadelphia," Pennsylvania, USA.
Catalogue name: "*Pseudotriton ruber*".

Remarks: Both series, ZSM 1265 and ZSM 1266, have been exchanged with "Dr. [Goreslan?]".

[Salamandridae] *Notophthalmus viridescens* (Rafinesque, 1820)
Material: ZSM 1040/0 from "Nord-Amerika" [=North America]; ZSM 1042/0 [2 ex, apparently lost] from "Philadelphia," Pennsylvania, USA.
Catalogue name: "*Triturus viridescens*".

[Bufonidae] *Atelopus ignescens* (Cornalia, 1849)
Material: ZSM 1015/0 [2 ex., apparently lost] from "Süd Amerika" [= South America]".
Catalogue name: "*Atelopus laevis*".

[Lacertidae] *Mesalina rubropunctata* (Cope, 1861)
Material: ZSM 753 [2 ex.] from "Suez," Egypt collected by "Wagner".
Catalogue name: „*Eremias rubropunctata*"
Remarks: The collector Moritz Wagner is usually indicated as "M. Wagner" in the ZSM catalogue, while here the entry only refers to "Wagner". Even that only the family name is used in some other entries which clearly refer to Moritz Wagner, here the locality "Suez" was, according to our knowledge today, never visited by Wagner. Therefore, it remains questionable if he probably visited Egypt during one of his many shorter travels, or got these specimens in exchange.

[Scincidae] *Plestiodon fasciatus* (Linnaeus, 1758)
Material: ZSM 832/0 [2 ex.] from "Philadelphia," Pennsylvania; ZSM 833/0 [2 ex.] from "Nordamerika" [= North America, without further locality].
Catalogue name: "*Eumeces fasciatus*".

[Boidae] *Boa constrictor* (Linnaeus, 1758)
Material: ZSM 1376/0, ZSM 1377/0 from "Süd-Amerika" [=South America, no further locality specified].
Catalogue name: „*Boa constrictor*"

[Colubridae] *Cubophis cantherigerus* (Bibron, 1843)
Material: ZSM 1786/0 [? Status unclear] from "Süd-Amerika" [=South America, without further locality].
Catalogue name: „*Leimadophis angulifer* (Bibr.)"

[Colubridae] *Lampropeltis nigra* (Yarrow, 1882)
Material: ZSM 1840/0 from "Tenesee [Tennesee], USA".
Catalogue name: „*Lampropeltis getula nigra*".

[Colubridae] *Lampropeltis triangulum* (Lacépède, 1789)
Material: ZSM 1841/0 [4 ex.] from "New York," USA.
Catalogue name: „*Lampropeltis getula triangulum*".

[Colubridae] *Lygophis lineatus* (Linnaeus, 1758)
Material: ZSM 1784/0 [status unclear], ZSM 1785/0 [2 ex., status unclear] from "Süd-Amerika" [= South America, without further locality].
Catalogue name: „*Leimadophis triscalis*", „*Lygophis lineatus*" [ZSM 1784/0]; "*Dromicus lineatus*" [ZSM 1785/0]

[Colubridae] *Nerodia sipedon* (Linnaeus, 1758)
Material: ZSM 1472/0 [status unclear], ZSM 1473/0 [status unclear] from "New York," USA; ZSM 1474/0 [status unclear] from "Florida," USA.
Catalogue name: „*Natrix sipiton* [sic!]"

DISCUSSION

This "checklist" encompasses 321 (207 extant, 114 lost or apparently lost; see also Table 1 for details) herpetological specimens collected by Moritz Wagner and present in the collections of the NMW, RMNH, ZFMK, ZMB, or ZSM. However, it is possible that more material will be discovered in other collections, e.g., the Paris collection to which Wagner probably donated some of the Algerian material. In particular, the Zoological Museum of the Friedrich-Alexander-University Erlangen-Nürnberg [=Nuremberg] possibly also holds material collected from Algeria (especially from his short stay in 1834) or shorter travels in Europe, e.g. southern France. His brother, Rudolf Wagner, being appointed as professor of Zoology, became the head of the zoological collection when the museum was separated into distinct collections on January 18th 1833. Up to 1840, when Rudolf Wagner left the university upon accepting a position in Göttingen, he enlarged the collection which became one of the most important zoological collections in Germany at this time. During this time, Moritz Wagner often visited Erlangen and the university awarded him with a doctoral degree. Therefore, it can be presumed that Wagner also donated material to the collection, but nevertheless, as in Göttingen, space for collections is limited at the university and the collection has not been accessible since 1985 and parts remain inaccessible today. The Museum Koenig in Bonn probably houses the largest number of herpetological vouchers collected by M. Wagner (see Table 1) from this time. He donated a large amount of specimens from North America to both the ZMUG and the ZSM collection, but no material from Central America was donated to the Göttingen collection, probably due to his emerging affiliation to Munich and the Bavarian king after the voyage to North and Central America. Nearly all material from his last voyage to Central- and South America was donated to the Munich collection (ZSM). However, as collection dates are lacking in the ZSM catalogue, it is often not possible to reconstruct if the material was collected during his first or the second expedition to Central America.

Table 1. Number of specimens collected by Moritz Wagner, referring to his five general collecting areas and the investigated collections.

Collection	Algeria	Caucasus	North America	Central America	South America
NMW				18	1
RMNH	20				
ZMB			1	5	1
ZMUG	(3)	(9)	(20)		
ZFMK	4	15	19		
ZSM			75 (39)	24 (12)	24 (31)
Total	**27**	**24**	**154**	**59**	**57**

Table 2. Currently identified type material collected by Moritz Wagner.

Original name	Current name	Type(s)
Bufo mauritanicus Schlegel, 1841	*Bufo mauritanicus*	Holotype RMNH 2122
Chalcides heteropus Wiegmann, 1856	*Bachia heteropa*	Paralectotype ZMB 52679
Diaphorolepis wagneri Jan, 1863	*Diaphorolepis wagneri*	Holotype ZSM 2708/0
Ecpleopus affinis Peters, 1863	*Pholidobolus affinis*	Holotype ZSM 644/0/1
Elaps hertwigii Werner, 1897	*Micrurus multifasciatus hertwigi*	Holotype ZSM 2268/0
Elaps macgravii var. *ancoralis* Jan, 1872	*Micrurus ancoralis*	Holotype ZSM 210/0 [lost]
Hemiphractus fasciatus Peters, 1862	*Hemiphractus fasciatus*	Holotype ZSM 36/0
Himantodes cenchoa var. *elegans* Jan, 1871	*Imantodes gemmistratus*	Holotype ZSM 30/0 [lost]
Hylaemorphus Pluto Schmidt, 1858	*Atelopus varius*	Syntypes NMW 3875.1–4
Micrurus latifasciatus Schmidt, 1933	*Micrurus latifasciatus*	Paralectotype ZSM 2263/0
Micrurus latifasciatus Schmidt, 1933	*Micrurus latifasciatus*	Paratype ZSM 2263/0
Phyllobates chalceus Peters, 1873	*Pristimantis chalceus*	Syntypes ZSM 1045/0 [2.ex]
Plectromantis wagneri Peters, 1862	*Leptodactylus wagneri*	Holotype ZSM 1080/0
Rhabdosoma occipitoalbum Jan, 1862	*Atractus occipitoalbus*	Holotype ZSM 1395/0 [lost]
Spelerpes palmatus Werner, 1897	*Bolitoglossa palmata*	Paralectotypes ZSM 1272/0 [2 ex, lost]
Spelerpes palmatus Werner, 1897*	*Bolitoglossa palmata*	Lectotype NMW 22862
Triton ophryticus Berthold, 1846	*Ommatotriton ophryticus*	Lectotype ZFMK 27793
Vipera wagneri Nilson & Andrén, 1984	*Montivipera wagneri*	Holotype ZFMK 32495

*= for discussion of this specimen see species account.

Moritz Wagner never worked as a herpetologist and only his first books about his travels have a separate chapter about amphibians and reptiles (Wagner 1841, 1850). However, he collected some important material, e.g., the type material of *Ommatotriton ophryticus* (Berthold, 1846), *Montivipera wagneri* (Nilson & Andrén, 1984), *Diaphorolepis wagneri* Jan, 1863 and *Leptodactylus wagneri* (Peters, 1862) (see also Table 2 for details). Altogether, 23 of the 149 herein recognized specimens were later used as the basis to describe new species. However, in his several publications about zoogeography and speciation (e.g. M. Wagner 1889), Wagner often referred to reptiles. One dubious taxon is mentioned several times. Wagner (1868, 1880) mentioned a pygmy *Crotalus* which he collected on the plateau of Costa Rica and which was, according to Wagner (1868, 1880) described as a new species by Leopold Fitzinger. However, Wagner never mentioned the name of the new species or the citation of the description or the collection of the type specimen. Moreover, there is no *Crotalus* taxon described by

Fitzinger and no *Crotalus* specimen was found within the Wagner collection. Only two Crotalinae collected by Wagner in Costa Rica were found. *Bothriechis schlegelii* (NMW 28002) and *Porthidium lansbergi* (NMW 28392), but both were never recognized in the genus *Crotalus* nor as closely related to *C. horridus* as mentioned by Wagner (1868, 1880).

The same problem exists with a putative *Alligator* species. Wagner (1880) mentioned that after an examination of his material by Carl Theodor von Siebold and Leopold Fitzinger one specimens from western Panama was recognized as a new species. Again, Wagner (1880) did not provide any further data and no corresponding specimen was found.

Even though type material of several species was collected by Moritz Wagner, his material is mainly of historic interest. However, especially the case of *Montivipera wagneri* shows that even historical material can provide new insights, especially if it was collected in poorly known geographic regions.

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Finally it is gratefully acknowledged that the academic staff of the Göttingen museum ultimately agreed with one of the authors (WB) in the mid-1970s to transfer the entire ethanol-preserved herpetology collection, including the historically important material collected by Moritz Wagner, to the Museum Koenig in Bonn.

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Studies on the taxonomy of the *Gekko vittatus* Houttuyn, 1782 complex (Squamata: Gekkonidae)
I. On the variability of *G. vittatus* Houttuyn, 1782 sensu lato, with the description of a new species from Palau Islands, Micronesia

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Abstract. The present study focuses on morphological variation among conspicuous geographic colour morphs of *Gekko vittatus* (sensu lato). Meristic data revealed four distinct, allopatric groups of phenotypes, whereas the morphometric characters examined do not differ among colour morphs. One of these, endemic to the Palau Islands in the Pacific, is also genetically distinct and is here described as a new species.

Key words. *Gekko vittatus* phenotypes; taxonomy; Palau Islands; *Gekko remotus* sp.n.

INTRODUCTION

Gekko vittatus Houttuyn, 1782 is one of the few gecko species which is known to science already since the end of the 18th century. Its conspicuous white vertebral stripe on a light brown background, bifurcating in the neck, and its banded tail give this gecko a characteristic appearance. Subsequently, several new taxa, regarded as closely related to *G. vittatus*, were described, as well as some colour or pattern morphs which did not receive taxonomic recognition so far (e.g. Duméril & Bibron 1836, Peters 1872, Mertens 1934, McCoy 1980, 2006).

Generally, the taxonomy of the nominal species *G. vittatus*, including the known morphs, synonyms and putative taxa, is far from being satisfactorily solved. Here, we investigate whether forms differing in colouration pattern from typical *G. vittatus* can also be characterized by meristic and morphometric characters. We identify several axes of variation among the populations analysed, and formally describe a new species from the Pacific Palau Islands.

MATERIAL AND METHODS

A total of 48 specimens tentative assigned to *G. vittatus* (sensu lato) were examined (listed in the Appendix). The following characters (morphometric, meristic and qualitative) were recorded for each complete specimen (damaged specimen resulted in partially reduced data sets): SVL – snout vent length, TL – tail length, HL – maximum head length (from tip to snout to posterior margin of ear), HW – maximum head width, HH – maximum head height, SE – length from snout tip to anterior margin of eye, EE – length between posterior margin of eye to anterior margin of ear, RW – maximum rostral width, RH – maximum rostral height, MW – maximum mental width, ML – maximum mental length, DTL – dorsal tubercle length (in one of the two median dorsal rows, DTW – dorsal tubercle width (in one of the two median vertebral rows), SPL – supralabials, IF – infralabials, N – nasals (in direction from rostral to labial: nasorostrals, supranasals, postnasals), NP – nostril contact rostral, I – internasals, S6S – scales between the 6th supralabials across the snout, IO – interorbitals, SC – spiny ciliaries, PM – postmentals, GP – gulars bordering postmentals, ESRM – enlarged scale row behind mental, DTR – dorsal tubercle rows, GSDT – granules surrounding dorsal tubercles, GTL – granules between two dorsal tubercles in longitudinal direction, GTC – granules crosswise between two dorsal tubercles , SMC – gular and ventral scales between mental and cloacal slit, V – ventrals, TVF – tubercles on ventrolateral fold, SR – scales around mid-body, LF1 – subdigital lamellae under 1st finger, LF4 – subdigital lamellae under 4th finger, LT1 – subdigital lamellae under 1st toe, LT4 – subdigital lamellae under 4th toe, FTW – webbing present between finger

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and toes, TFL – tubercles fore limbs, THL – tubercles hind limbs, PP – precloacal and femoral pores (in males only), PS – precloacal and femoral scales with minute pores or shallow depressions (in females only), PCT – postcloacal tubercles, T1W – tubercle rows in the 1st caudal whorl, T3W – tubercle rows in the 3rd caudal whorl, S1W – dorsal scale rows in the middle of the first caudal whorl, S3W – dorsal scale rows in the middle of the third caudal whorl, SC1W – subcaudal rows in the 1st whorl, SC3W – subcaudal rows in the 3rd whorl, and SC5W – subcaudal rows in the 5th whorl. Bilateral scale counts were given as right/left. Measurements were recorded with a dial calliper to the nearest 0.5 mm (except the values for rostral, mental and dorsal tubercle size which were measured to the nearest 0.02 mm).

Collection acronyms. CPHR – Herbert Rösler private collection, Thale; MNHN – Muséum national d'Histoire naturelle, Paris; SMF – Senckenbergmuseum, Frankfurt am Main, now Forschungsinstitut Senckenberg, Frankfurt; ZMB – Zoologisches Museum Berlin, now Museum für Naturkunde; ZFMK – Zoologisches Forschungsmuseum Alexander Koenig, Bonn; ZSM – Zoologische Staatssammlung, München. Specimens were assigned to four different phenotype groups according to their coloration pattern, the shape of their nuchal tubercles, and their geographic origin. Subsequently differences in respect to mensurable and meristic characters were assessed using non-parametric statistics (one-way NPMANOVA) and Principal Coordinates Analysis (PCO) using PAST (Hammer et al. 2001).

RESULTS

Phenotypes of *Gekko vittatus* sensu lato

G. vittatus phenotype 1 (Fig. 1).
A distinct light vertebral stripe, several millimetres wide and bordered with dark brown, bifurcating in the neck region and usually reaching the posterior margin of the eyes is present. This stripe can be interrupted, shortened (McCoy 2006: Fig. 14) or even missing (Rösler et al. 2011: Fig. 7A) between neck and eye. The vertebral stripe slightly widens more or less saddle-like in the anterior caudal region. The tail is annulated with sharply defined light and dark rings, the dark rings are usually twice as broad as the light ones. Juveniles are similar to adults, but with more intensive caudal colouration. Roundish to oval pointed tubercles present only within the white rami of the vertebral band, all remaining nuchal tubercles blunt and slightly convex.

Origin of the specimens examined: Wokan (Aru Islands, Indonesia); Asmat, Nabire, (Western New Guinea, Indonesia), Kordo, Mysore (Schouten Group, Western New Guinea, Indonesia), Pulau Ambon (Maluku, Indonesia), Didessa, Airdhills (Papua New Guinea), Ralum, Ratavul (New Britain, Papua New Guinea), Mioko (Duke of York Group, Papua New Guinea).

G. vittatus s.l. phenotype 2 (Fig. 2).
Irregularly flecked pattern on head, body and limbs. Sometimes a light vertebral stripe densely interspersed with darker flecks is discernible. Two dark parallel paravertebral sacral stripes framing a lighter sacral are characteristic. Tail above with short irregular dark stripes and flecks, below monochromatic, whitish, medially with narrow, dark streaks. Subadults with all characters of the adults. All nuchal tubercles round to oval, conical, pointed and irregularly arranged.

Origin of the specimens examined: Palau Islands (Republic of Palau).

G. vittatus s.l. phenotype 3 (Fig. 3).
Colour pattern as in phenotype 1, but nuchal tubercles larger and more distinctly conical, pointed.

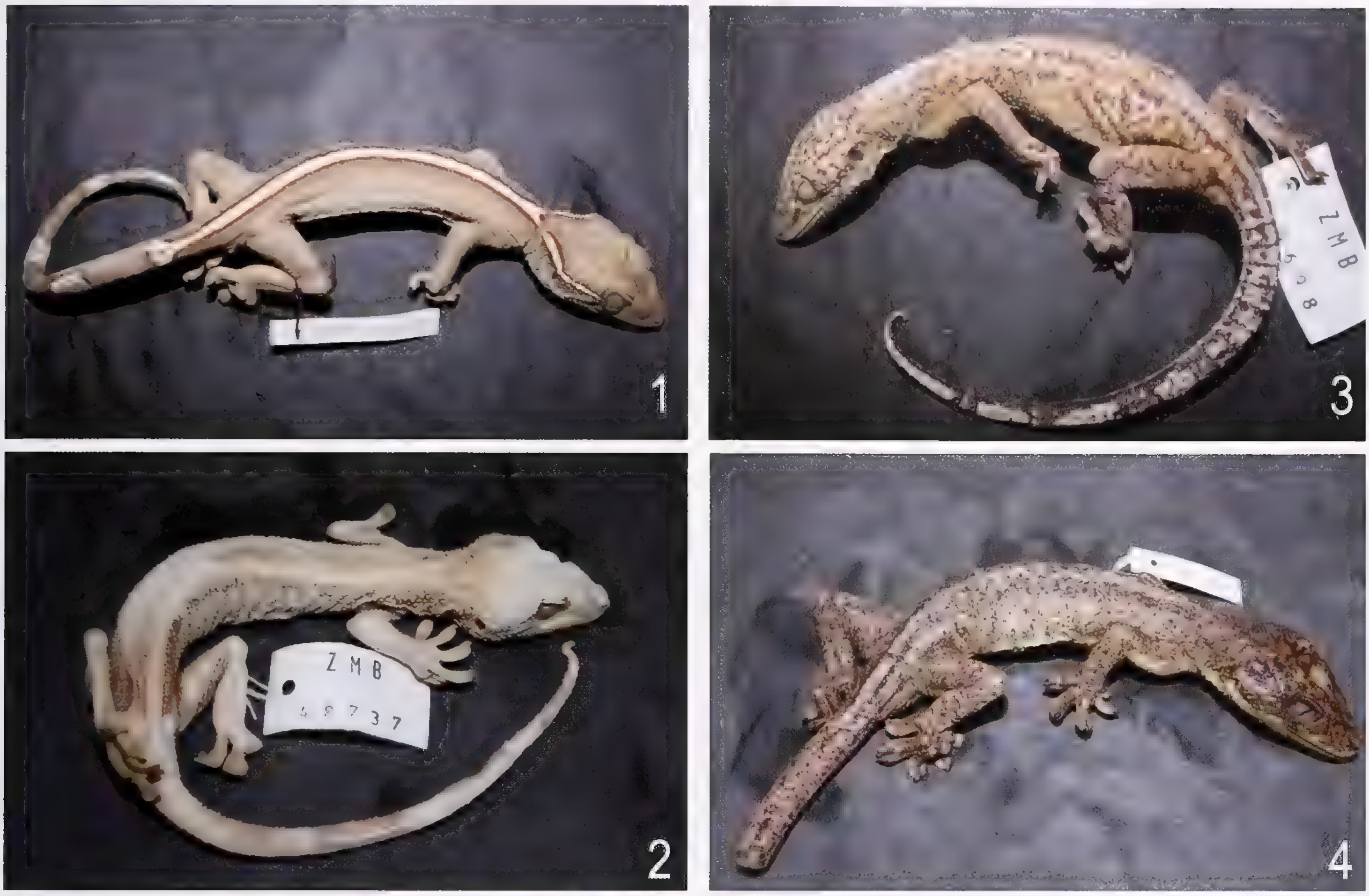
Origin of the specimens examined: Kei Islands (Indonesia).

G. vittatus s.l. phenotype 4 (Fig. 4).
Upper side variegated with light and dark. Vertebral stripe entirely lacking or rarely slightly indicated (McCoy 2006: Fig. 115). Two light sacral stripes sometimes present. Tail banding only indicated, predominantly flecked or variegated. All nuchal tubercles conical, pointed, larger than in phenotype 1.

Origin of the specimens examined: Nissan Atoll (Green Islands, Papua New Guinea).

ANALYSIS OF MORPHOLOGICAL CHARACTERS

Besides of the conspicuous differences in colour pattern, the present sample of *G. vittatus* s.l. showed considerable variation in several scalation characters while size and body proportions appeared to be less distinct. Mean values as well as minimal and maximal values are provided in Tables 1 and 2. The four pre-defined groups of phenotypes differ not significantly in the morphometric characters examined ($p < 0.2424$; F: 1.254; one-way NPMANOVA; 50000 permutations; distance measure: Gower), while differences in meristic characters are highly significant ($p < 0.00004$; F: 3.707, one-way NPMANOVA; 50000 permutations; distance measure: Gower). A pairwise comparison of the four groups revealed that only phenotypes 1 and 2 show significant differences in meristic characters, while the other phenotypes differ mainly in respect to colouration pattern (Table 3, Figs 1–4). A Principal Coordinates Analysis (PCO; Fig. 5a) on the morphological



Figs 1–4. 1. *Gekko vittatus* phenotype 1, ZFMK 20612, male, Pulau Ambon, Indonesia; **2.** *Gekko vittatus* s.l. phenotype 2 (sp.n.), ZMB 5698, female, Republic of Palau; **3.** *Gekko vittatus* s.l. phenotype 3, ZMB 48737, male, Kei Islands, Indonesia; **4.** *Gekko vittatus* s.l. phenotype 4, SMF 9159, male, Nissan Atoll, Green Islands, Papua New Guinea.

data obtained from 21 specimens [28 characters; including specimens from all four phenotypes identified in the present study as well as one of the syntypes of *G. bivittatus* (MNHN 6714) and the holotype of *G. trachylaemus* (ZMB 7511)] revealed that the two respective type specimens fall far outside of the remaining clusters. Hence, and supported by the finding that more differences in colouration are present between those two nominal taxa and the four phenotypes of *G. vittatus* s.l. (see next paragraph), we consider the evaluation of the taxonomic status of *G. bivittatus* and *G. trachylaemus* as not within the scope of the present study, because we shall deal with these nominal taxa in detail in a forthcoming paper.

The replication of this PCO excluding *G. bivittatus* and *G. trachylaemus* revealed two major clusters – one encompassing all specimens of phenotype 2 while the second cluster includes roughly all remaining specimens with exception of a single specimen related to phenotype 3 (Fig. 5b). The dataset used in the previous analysis was selected to maximize the number of specimens included in the analysis (because of the preservation state of most specimens, datasets of single specimens are mostly incomplete, missing one or more characters). Therefore the resulting datasets for analysis are either selected to maximize the number of specimens (which means having fewer characters) or to maximize the number of characters (which means encompassing fewer specimens). To check if the use of these two different datasets results in significantly different PCO analyses, a PCO was carried out on a dataset maximizing the number of characters (44 characters; 14 specimens; Fig. 5c). The results of the two PCO analyses are in principal accordance, showing a single cluster for the specimens assigned to phenotype 2. Differences occur in the positions of the specimens assigned to phenotypes 3 and 4, which cluster either together with the phenotype 1 specimens (Fig. 5b) or completely outside of the clusters of phenotype 1 respectively two specimens (Fig. 5c.). On the basis of the PCO results presented here, phenotypes 1 and 2 can be regarded as morphologically different entities, while there is no evidence regarding the morphological affiliation of phenotypes 3 and 4.

Available names in the synonymy of *G. vittatus* s.l.

Gekko vittatus has been described by Houttuyn (1782) from "Zekerlyk uit de Indië" (certainly from India) whereon the type locality was founded. Subsequently, the nomen

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Table 1. Mensural data of the *Gekko vittatus* phenotypes 1–4, the syntypes of *Gekko bivittatus* and the holoype of *Gekko trachylaemus* (mean ± SD; max; min; Abbreviations as in material and methods).

	phenotype 1	**phenotype 2**	**phenotype 3**	**phenotype 4**	***G. bivittatus***	***G. trachylaemus***
n	**27**	**12**	**2**	**3**	**2**	**1**
SVL	76.35±25.20 38.2–108.3	81.63±30.56 39.0–117.5	105.3–125.4	110.57±2.25 108.0–112.2	109.0–120.0	103.7
TL	70.47±41.17 39.4–114.5	70.81±23.18 53.0–114.8	116.0–123.0	—	115.0–125.0	106.6
HL	21.04±6.34 11.1–29.1	21.23±7.16 11.1–29.4	30.0–32.5	30.57±1.56 29.1–32.2	28.0–30.0	28.3
HW	14.73±4.71 7.6–20.9	14.88±5.52 7.8–21.6	21.7–22.0	21.53±1.50 19.8–22.5	19.8–18.9	19.6
HH	9.07±2.83 5.0–12.6	10.53±7.25 4.9–31.5	13.1–13.9	12.77±1.06 11.8–13.9	11.4–11.8	10.6
SE	10.91±1.54 5.2–13.9	10.16±3.50 4.9–14.5	15.0–16.6	14.63±0.75 13.9–15.4	11.5–12.8	13.5
EE	8.99±1.54 4.3–11.9	8.48±2.94 3.9–12.6	11.7–12.7	11.83±0.32 11.6–12.2	10.6–12.8	9.9
RW	3.92±0.48 3.20–4.60	4.28±0.47 3.40–4.80	3.90–4.50	4.50±0.34 4.10–4.71	3.9–5.5	4.00
RH	2.06±0.37 1.40–2.50	2.09±0.27 1.7–2.3	2.10–2.90	2.45±0.38 2.14–2.88	1.8–2.3	2.50
MW	2.32±0.52 1.90–3.60	2.02±0.35 1.70–2.30	2.40–2.50	2.58±0.22 2.35–2.78	—	2.60
ML	1.72±0.27 1.10–1.92	1.82±0.32 1.30–2.20	1.90–2.30	2.02±0.27 1.71–2.18	1.53–1.65	1.80
DTL	0.67±0.11 0.49–1.91	0.85±0.16 0.52–0.94	0.72–0.92	0.81±0.08 0.73–0.89	0.63–0.81	1.19
DTW	0.56±0.13 0.43–0.89	0.73±0.20 0.35–0.93	0.56–0.72	0.63±0.09 0.53–0.71	0.75–0.67	0.80
SVL/TL	0.95±0.02 0.89–1.03	0.97±0.03 0.93–1.02	0.91–1.02	—	0.95–0.96	0.97
SVL/HL	3.62±0.18 3.32–3.94	3.80±0.19 3.51–4.14	3.51–3.86	3.62±0.12 3.48–3.71	3.89–4.00	3.66
HL/HW	1.43±0.05 1.34–1.49	1.44±0.07 1.31–1.57	1.38–1.48	1.42±0.05 1.36–1.47	1.48–1.52	1.44
HL/HH	2.32±0.09 2.22–2.46	2.27±0.44 2.18–2.60	2.29–2.34	2.40±0.19 2.19–2.56	2.46–2.54	2.67
SE/EE	1.21±0.07 1.13–1.31	1.20±0.07 1.12–1.34	1.18–1.42	1.24±0.04 1.19–1.26	1.00–1.08	1.36
RW/RH	1.93±0.34 1.68–2.56	2.07±0.29 1.91–2.67	1.34–2.14	1.85±0.19 1.64–2.00	2.17–2.39	1.60
MW/ML	1.34±0.26 1.11–1.89	1.13±0.22 0.86–1.47	1.09–1.26	1.29±0.09 1.20–1.37	—	1.44
RW/MW	1.74±0.25 1.14–2.00	2.16±0.37 1.68–2.53	1.63–1.80	1.74±0.06 1.68–1.80	—	1.54
DTL/DTW	1.24±0.35 0.55–1.82	1.20±0.18 0.97–1.49	1.28–1.29	1.29±0.07 1.24–1.38	—	1.49
DTLx100/SVL	0.71±0.08 0.55–0.86	0.77±0.08 0.62–0.85	0.68–0.73	0.73±0.06 0.68–0.79	—	1.15
DTWx100/SVL	0.62±0.26 0.44–1.26	0.66±0.13 0.42–0.79	0.53–0.57	0.57±0.07 0.49–0.63	—	0.77

Table 2. Meristic data of the *Gekko vittatus* phenotypes 1–4, the syntypes of *Gekko bivittatus* and the holotype of *Gekko trachylaemus* (mean ± SD; max; min; Abbreviations as in material and methods).

	phenotype 1	**phenotype 2**	**phenotype 3**	**phenotype 4**	***G. bivittatus***	***G. trachylaemus***
n	**27**	**12**	**2**	**3**	**2**	**1**
SPL	13.45±0.94 12–16	13.00±0.93 11–15	12–13	13.50±0.84 12–14	10–11	12/12
IF	13.51±1.13 11–16	12.38±0.82 10–14	11–14	14.50±0.55 14–15	11–14	10/10
N	3.02±0.15 3–4	3.13±0.45 3–5	3	3	—	3
I	1.15±0.76 0–3	1.17±0.58 1–3	1	0.33±0.58 0–1	2	0
6.SPL	40.55±4.74 32–50	40.55±2.81 36–45	46–49	44.00±1.73 43–46	—	38
IO	27.46±1.76 24–31	27.42±2.15 25–31	24–25	32.50±0.71 32–33	33	24
CS	3.95±1.52 1–6	4.50±1.25 2–7	4–5	5.00±0.71 4–6	5–6	2–4
PM	2	1.92±0.29 1–2	2	2	1–2	2
GP	3.69±0.70 3–5	4.00±1.28 2–6	4–5	4.00±1.41 3–5	2–4	3
ESRM	5.08±0.71 4–6	5.25±0.62 4–6	4–5	6.00±1.00 5–7	5–6	4
DTR	26.27±2.28 22–31	24.75±1.36 22–27	26–27	27.67±0.58 27–28	19–22	24
GSDT	8.74±1.11 6–10	10.67±0.64 10–12	9–10	9.17±0.98 8–11	9–11	10–11
GTL	1.96±0.57 1–3	3.00±0.98 1–5	1–3	1.67±0.82 1–3	2–3	2–3
GTC	1.72±0.57 1–3	2.33±0.70 1–4	1–2	2.00±0.63 1–3	—	1–2
SMC	191.05±20.77 161–222	189.29±10.63 175–205	194–208	193.33±3.51 190–197	197	168
SR	134.89±11.58 115–155	137.29±3.73 131–142	139–142	130.67±3.21 127–133	129	—
V	32.26±2.82 27–39	30.63±2.88 25–34	31–38	34.67±4.73 31–40	—	—
LF1	13.08±1.27 10–15	15.80±0.77 14–17	15–17	16.67±1.21 15–18	15	13–14
LF4	18.08±1.94 13–22	21.50±0.95 20–23	18–22	19.67±0.82 18–20	21	19–21
LZ1	14.28±1.36 12–17	16.89±1.08 15–19	16–17	16.50±0.55 16–17	16	13–16
LZ4	21.22±2.07 17–26	24.15±1.23 22–26	23–25	21.17±0.75 20–22	23	19–20
PP	51.55±7.55 39–65	39.57±5.68 31–45	51–55	33.33±4.73 28–37	53	39
PS	16.20±4.76 11–26	2	—	—	35	—
PCT	2.04±0.74 1–5	1.55±0.51 1–2	1	2	—	1
T1W	3.08±0.74 2–4	3.42±0.51 3–4	3–4	5.33±2.52 3–8	5	3
T3W	3.08±0.00 3–4	3.33±0.65 3–5	3–4	3	5	3
S1W	10.58±1.27 8–12	11.91±0.83 10–13	12–13	12	—	11
S3W	11.25±0.82 10–13	12.40±1.17 1–14	11–13	11	—	11
SC1W	4.42±0.52 4–5	4.17±0.39 4–5	5–6	4	—	4
SC3W	4.08±0.32 4–5	4.00±0.00 4	4–5	4	—	4
SC5W	4.00±0.00 4	4.00±0.00 4	4–5	4	—	3

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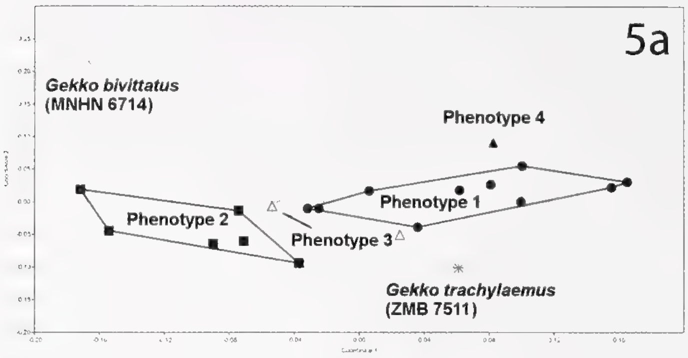

Fig. 5a. Principal Coordinates Analysis (PCO) on 28 morphological characters [8 metric (ratios of original biometric data), 18 meristic and 2 qualitative] of 21 specimens within the *Gekko vittatus* complex (OTUs including the nominal taxa *G. bivittatus* and *G. trachylaemus*). Raw data $\log_{10}$ transformed (after adding x=1 to all values); Similarity Index: Gower.

Axis	Eigenvalue	Percent
1	0.17682	35.08
2	0.09013	17.88
3	0.05113	10.16
Sum		63.11

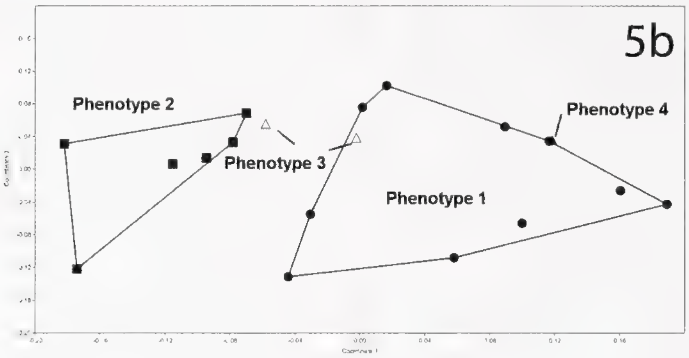

Fig. 5b. Principal Coordinates Analysis (PCO) on 28 morphological characters [8 metric (ratios of original biometric data), 18 meristic and 2 qualitative] of 19 specimens within the *Gekko vittatus* – complex (OTUs excluding the nominal taxa *G. bivittatus* and *G. trachylaemus*). Raw data $\log_{10}$ transformed (after adding x=1 to all values); Similarity Index: Gower.

Axis	Eigenvalue	Percent
1	0.21369	32,68
2	0.08660	13,24
3	0.06508	9,95
Sum		55,87

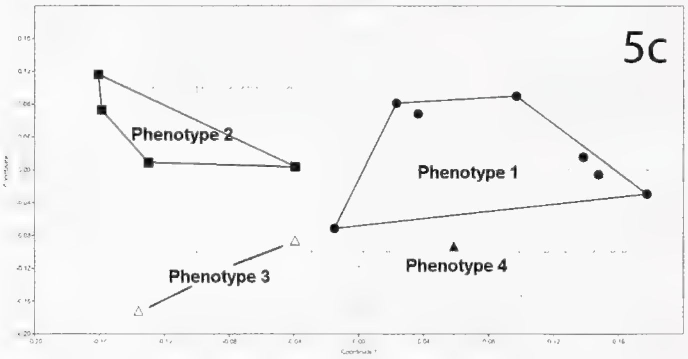

Fig. 5c. Principal Coordinates Analysis (PCO) on 44 morphological characters [10 metric (ratios of original biometric data), 31 meristic and 3 qualitative] of 14 specimens within the *Gekko vittatus* – complex. Raw data $\log_{10}$ transformed (after adding x=1 to all values); Similarity Index: Gower.

Axis	Eigenvalue	Percent
1	0.17682	35,08
2	0.09013	17,88
3	0.05113	10,15
Sum		63,11

vittatus was used in combination with various generic names: *Lacerta* (e.g. Gmelin 1789), *Platydactylus* (e.g. Fitzinger 1826) and *Lomatodactylus* (e.g. Van der Hoeven 1833). Currently, four names are considered to be synonymous with *Gekko vittatus* Houttuyn, 1782 (see Wermuth 1965, Bauer 1994, Kluge 2001):

1. *Lacerta unistrigata* Shaw, 1792. Independently from Houttuyn (1782), Shaw (1792) described *G. vittatus* again, as *Lacerta unistrigata*, but without data on any type material. Later, he changed this name into *Lacerta vittata* (see Shaw 1802). Despite the lack of type material, the original description is sufficiently conclusive to place *Lacerta unistrigata* in the synonymy of *G. vittatus* sensu lato.

2. *Stellio bifurcifer* Schneider, 1792. In the same year, Schneider (1792) published a substitute name for *G. vittatus* Houttuyn, 1782, viz. *Stellio bifurcifer*, and commented on it again (Schneider 1812) after having compared it with the description by Daudin (1802). Again, the original description allows synonymization of *Stellio bifurcifer* with *G. vittatus* sensu lato.

3. *Platydactylus bivittatus* Duméril & Bibron, 1836. While Duméril & Bibron (1836) ignored the priority of *Gekko* Laurenti, 1768 over *Platydactylus* Goldfuss, 1820 (Goldfuss 1820, Gray 1825), they generally accepted Cuvier's (1817) classification of geckos who had placed *G. vittatus* as member of *Platydactylus* under the unavailable name "Le Platydactyle à bande". Duméril & Bibron (1836) compared *Platydactylus vittatus* (= *Gekko vittatus*) with their newly described *Platydactylus Bivittatus* (sic) but admitted that both species are hardly distinguished by morphology and might be only colour morphs rather than species; "Il pourrait se faire que ce Platydactyle à deux bandes ne soit qu'une variété du Platydactylus vittatus, dont il ne diffère bien réellement que par la système de coloration". Boulenger (1885) downgraded *Platydactylus bivittatus* Duméril & Bibron, 1836 to a "variety" (currently mostly seen as a subspecies) of *Gekko vittatus* Houttuyn, 1782 (see also Strauch 1887, Boettger 1893, Werner 1900), before Loveridge (1948) finally synonymized this name with the nominotypic form (see also Guibé 1954, Brygoo 1990).

Table 3. Significance levels of morphological differences between four OTU's within the *Gekko vittatus* –complex ($p < 0.00004$; F: 3.707, one–way NPMANOVA; 50000 permutations; distance measure: Gower); pairwise uncorrected significances shown.

	Phenotype 1	Phenotype 2	Phenotype 3	Phenotype 4
Phenotype 1		0.00156**	0.6259	0.5576
Phenotype 2	0.00156**		0.8558	0.8675
Phenotype 3	0.6259	0.8558		1
Phenotype 4	0.5576	0.8675	1	

We re-examined both syntypes of *Platydactylus bivittatus* Duméril & Bibron, 1836 (Tabs 1, 2). MNHN 6714, an adult from "Nouvelle Guinée", has a relatively strong tuberculation and a high number of precloacal and femoral pores (53), and the unforked vertebral stripe is without flecks (Fig. 6). This character combination distinguishes it from both *G.* cf. *vittatus* from the Palau and the Kei Islands. The second syntype, MNHN 2285, an adult female from "Waigiuo" (= Pulau Waigeo) is badly preserved. Neither a vertebral stripe nor a light, dark-bordered sacral stripe is discernible within the variegated dorsal pattern (Fig. 7).

Its dorsal pattern resembles that of *G.* cf. *vittatus* from Nissan Atoll, but further comparisons and a larger sample size are necessary to see whether also the numbers of precloacal and femoral scales fit.

4. *Gekko trachylaemus* Peters, 1872. Described by Peters (1872) from "Nordaustralien" (North Australia) who diagnosed it by larger dorsal tubercles, less supralabials and infralabials, a larger mental and more extended webbing between fingers and toes. Peters & Doria (1878), however, synonymized *G. trachylaemus* with *G. vittatus*, and Cogger et al. (1983) pointed out that the alleged type locality should be wrong, as no Australian records of this gecko exist.

We re-examined the data given by Peters (1872) for *G. trachylaemus* on the basis of its holotype ZMB 7511 (Tab. 1 and 2): the mental relative to the rostral is broader than that of the Palau form and the phenotypes 3 and 4, but is within the range of *G. vittatus* s.str. (see Tab. 1). The scales behind the mental are relatively larger than in all other specimens studied, but the number of rows of these scales is the same (Tab. 2).The flat and smooth to weakly keeled nuchal, dorsal and lateral tubercles of *G. trachylaemus* are distinctly larger than in *G. vittatus* s.str. but less so in the Palau form and the phenotypes 3 and 4. The colour pattern in ZMB 7511 is strongly faded; only the short, sacral streaks as described by Peters (1872) are still a bit better discernible (Fig. 8).

The holotype of *Gekko trachylaemus* is distinguished from the Palau form and from the *G. vittatus* (s.l.) phenotypes 3 and 4 by a different ventral tail scalation: except the first three whorls, there are always three rows of subcaudals present in each whorl of the original, unregenerated tail while there are constantly four to five rows per whorl in *G. vittatus* s.str. as is also the case in the Palau form and in the phenotypes 3 and 4. Moreover, *G. trachylaemus* differs from the Palau form by larger and flatter nuchal and dorsal tubercles, larger tail tubercles and a more banded colour pattern. The assessment the taxonomic status of *Gekko trachylaemus* requires more material and is therefore beyond the scope of the present study.

CONCLUSIONS

Among the four phenotypes of *Gekko vittatus* s.l., only phenotype 1 has rather small, flat tubercles on head, body and limbs, und only the nuchal region bears sparsely distributed conical, pointed tubercles, while all other three phenotypes have larger, relatively high and pointed tubercles, particularly in the nape, so that they have a more spiny appearance. Together with its characteristic colour pattern, phenotype 1 corresponds closely with the original description and can thus be attributed to *Gekko vittatus* sensu stricto. The greatest affinity to this form in dorsal and tail colour pattern as well as regarding their position in the PCO plot is shown by the two Kei Islands males (ZMB 48737–48738; phenotype 3) which are, however, distinguished by their distinctly larger and more pointed nuchal tubercles as well as a possible different tail scalation. Pending further morphological studies and molecular genetic data, this phenotype should be termed *Gekko* cf. *vittatus* ("Kei Islands"). Despite the overall similarity of the specimens assigned to phenotype 4 to phenotype 1 which was shown in the PCO analysis certain differences in morphology and colouration [lower number of precloacal and cloacal pores (28–37) and the overall dark colouration including the lack of a vertebral stripe] suggests, that the three males from Nissan Atoll (SMF 9157–9159; phenotype 4) are also distinguishable from *G. vittatus* s.str. This phenotype should respectively be termed as *Gekko* cf. *vittatus* ("Nissan Atoll"). Based on the considerable genetic distance (see Rösler et al. 2011) and the significant differences in scalation and colour pattern as compared with the other three phenotypes outlined above, and as there is no older available name for the Palau population, we describe phenotype 2 below as a new species.

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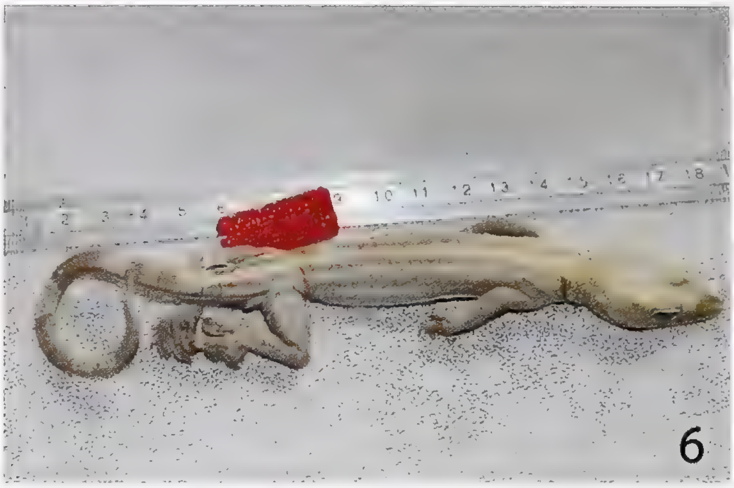

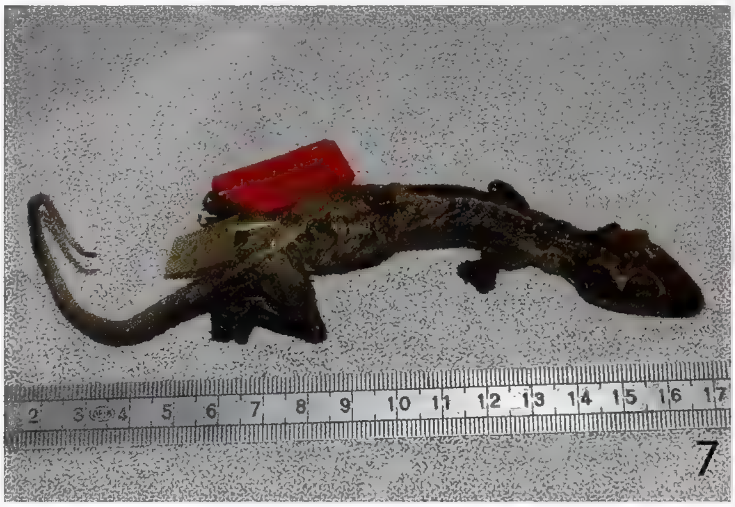

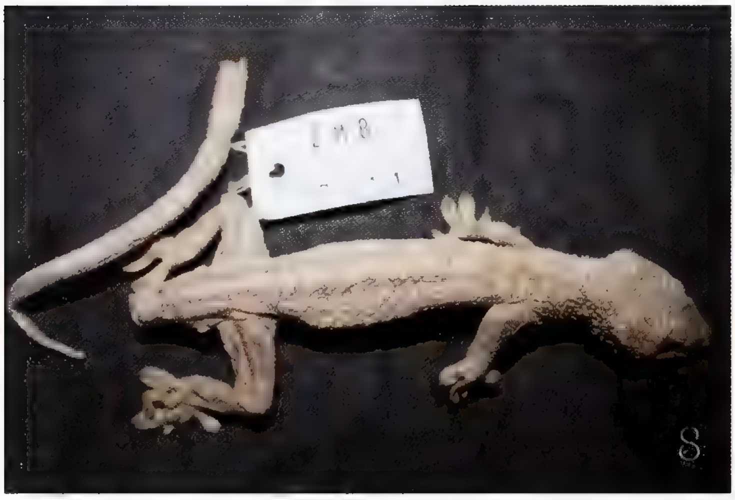

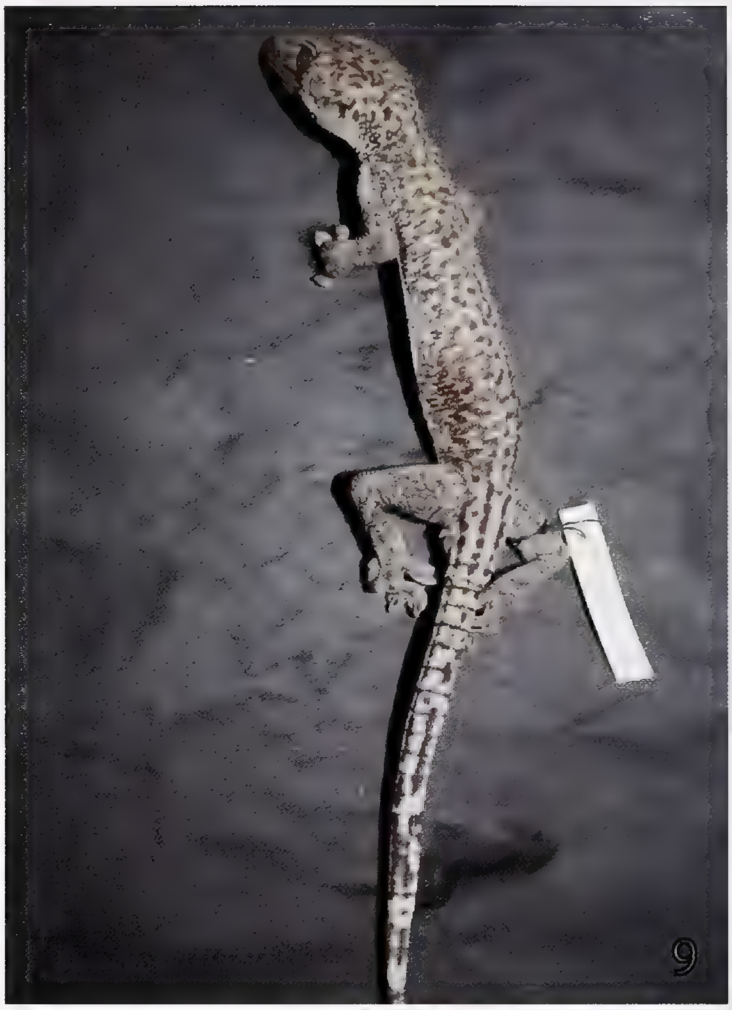

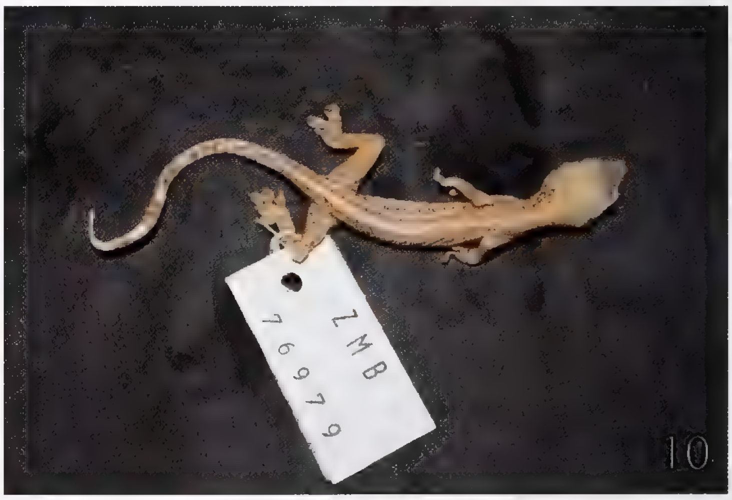

Figs 6–10. **6.** Syntype of *Platydactylus bivittatus*, MNHN 6714, male, New Guinea; **7.** Syntype of *Platydactylus bivittatus*, MNHN 2285, female, Pulau Waigeo, Indonesia; **8.** Holotype of *Gekko trachylaemus*, ZMB 7511, male, Australia; **9.** Holotype of *Gekko remotus* sp.n., ZFMK 20611, male, Republic of Palau; **10.** *Gekko remotus* sp.n., ZMB 76979, juvenile, Republic of Palau.

Gekko remotus sp.n.

Diagnosis. A species of the *Gekko vittatus* s.l. complex with which it is connected by its tubercles on throat and lateral folds as well as by colour pattern. From *Gekko vittatus* s.str. (phenotype 1) it is distinguished by pointed (versus blunt) nuchal tubercles and by the lack of a white, anteriorly forked vertebral stripe and of an annulated tail pattern. From *Gekko* cf. *vittatus* (phenotype 3, "Kei Islands") *Gekko remotus* sp.n. is distinguished by less numerous precloacal and femoral pores (31–45 vs. 51–55) and from *Gekko* cf. *vittatus* (phenotype 4, "Nissan Atoll") by a distinct flecked dorsal (vs. dark and light variegated) colour pattern.

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Holotype. ZFMK 20611, male, Palau Islands, coll. by Brock, before 1874, received from Godeffroy Museum, Hamburg (via Zoological Museum, University of Göttingen, 1977).

Description of holotype. Head moderately depressed, distinct from neck. Body not depressed, roundish, belly flat. Tail round, not swollen at base; SVL 117.5 mm, TL 118.5 mm (incomplete); HL 29.4 mm; HW 21.3 mm; HH 13.5 mm; SE 14.2 mm, EE 11.5 mm; ED 5.65 mm; EAD 4.26 mm. Proportions: SVL/HL 4.00; HL/HW 1.38; HL/HH 2.18; SE/EE 1.23; ED/EE 1.33.

Rostral triangular, wider than high (RW 4.39 mm, RH 2.23 mm, RW/RH 1.97), wider than mental (RW/MW 1.82), on the upper margin a converse Y-shape suture; supralabials 14/13, 11/10 to the center of eye; nostril in contact with rostral and 1st supralabial; nasals 3/3, nasorostrals squarish, twice as large as supranasals and postnasals; 1 rectangular internasal, half as big than the nasorostrals. Snout with a longitudinal shallow groove; lateral scales on snout polygonal, smooth, flat to weakly domed, juxtaposed, one and a half times as large as on the mid-snout; 17 scales between postnasals and orbit, 44 scales between the two 6th supralabials; median snout scales polygonal, smooth, flat to weakly domed, juxtaposed; dorsal ciliaries as large as median snout scales, 5/5 spiny tubercles posteriorly. Ear opening vertical, oval; interorbitals 27, polygonal, smooth, flat to weakly domed, juxtaposed; orbital scales weakly conical, and one a half times as large as those in the middle of head. Occipital and nuchal scales polygonal, flat, juxtaposed, half as big as the median interorbitals; temporal, occipital and nuchal tubercles round, conical, five times as big as the surrounding scales. Mental triangular, wider than long (MW 2.41 mm, ML 2.10 mm, MW/ML 1.15); infralabials 12/13, larger than supralabials; posterior of mental five rows of enlarged roundish, oval scales, two of them bordering the mental; no enlarged postmentals; gulars as big as nuchals, round, flat, juxtaposed, interspersed with double-sized conical tubercles. Dorsal and lateral scales similar to nuchals; Dorsal tubercles 2–3 times as big as the bordering dorsal scales (DTL 0.94 mm, DTW 0.79 mm, DTL/DTW 1.19), oval, conical, weakly keeled, surrounded by 10–11 dorsals, in 22 more or less regularly arranged longitudinal rows. Lateral tubercles as large as dorsal tubercles, mostly round, conical to pointed. Tubercles on lateral fold large, blunt, conical. separated by 1–2 small flank scales. Ventrals flat, smooth, imbricate, the median ones being 3–4 times larger than dorsals, 31 between the lateral folds. Midbody scale count 136; 184 scales between mental and cloaca. Scales on upper side of forelegs as large as dorsals, flat, smooth and juxtaposed, passing in small, granular scales below; tubercles on forelegs roundish to oval, blunt, conical, 2–3 times larger than the surrounding scales. Upper and lower thigh scales flat, imbricate passing posteriorly into smaller granules. Tubercles on hind limbs resemble those on forelimbs. Digits connected by narrow webbing, the claws of digits 2–5 encircled by 3 scales each, the median claw of the sheath 2–3 times bigger than the two lateral sheath scales. Subdigital lamellae 16/16 under the 1st finger, 22/23 under the 4th finger, and 17/17 under the 1st toe, and 24/26 under 4th toe, interdigital webbing present but weakly developed. 31 precoacal and femoral pores in one angular, continuous row, 17/17 smooth femoral scales towards the knees behind them small, round tubercles. Original tail distinctly whorled, not thickened at the base. Dorsal tail scales as large as on the back, flat or weakly domed, juxtaposed to weakly subimbricate, arranged in irregular oblique rows. The 1st whorl has 12 scale rows middorsally, the 3rd whorl 13; down to the 11th whorl 3 rows of tubercles per whorl. Tail tubercles similar to dorsal tubercles in size, conical and submucronate, subcaudals not widened, mostly 2, rarely 3 per oblique row, in the 1st whorl 5, in all remaining whorls 4 oblique scale rows per whorl, the last pair of scales a bit enlarged.

The colour in preservative is lilac-grey on head and dorsum, pale grey on tail. Head, dorsum and limbs densely flecked with brown, the flecks being partly confluent. Sacral area with two short blackish brown stripes, bordering a light median zone between them. Tail dorsally variegated with brown. Underside of head, body and limbs greyish brown. Tail medially with a narrow, interrupted dark gray streak (Fig. 9).

Variation. The infraspecific variability of measurements, scalation characters and colour pattern was evaluated in a series of 11 topotypic specimens from the ZMB collection which are, however, regarded as further material rather than paratypes, because neither the holotype nor these specimens have specific data as to their particular island origin within the Palau archipelago. Measurements, proportion indices and scalation values are shown in Tabs 4 and 5.

As compared with the predominantly greyish-coloured holotype, the ground colour of five adult males from Palau varies between pale brown and dark brown. A light vertebral strip, stretching from the nape to the tail base is only shadowy indicated in four males while it is more distinct with a lateral bordering in one.

Four specimens have only a weakly discernible flecked pattern, and only one specimen is comparable to the holotype in this respect (Fig. 2). Of six juveniles of various sizes, only the biggest three (SVL 57–65 mm) have a pattern similar to that of the holotype (Fig. 10), in two smaller ones (SVL 51–54 mm) the light vertebral stripe is forked and reaches the orbital hind margin; the smallest juvenile (SVL 39.0 mm) is uniformly pale brown. The underside of the tail is light in all Palau specimens, with a median, more or less distinct and dark, longitudinal stripe.

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Table 4. Mensural data of the holotype and the topotypic specimens of *Gekko remotus* sp.n. (Abbreviations as in material and methods, all measurements in mm).

	ZMB 5698	**ZMB 5889**	**ZMB 6239**	**ZMB 7922**	**ZMB 7982**	**ZMB 76976**	**ZMB 76977**	**ZMB 76978**	**ZMB 76979**	**ZMB 76980**	**ZMB 76981**	**ZFMK 20611**	mean±SD min–max
sex	female	male	juvenile	male	male	male	female	juvenile	juvenile	juvenile	juvenil	male	
SVL	111.4	114.6	39.0	117.5	65.5	110.0	83.5	57.2	58.0	54.2	51.1	117.5	81.63±30.56 39.0–117.5
TL	114.8	109.4*	38.0*	104.6*	66.4	83.0*	90.0	57.5	60.5	53.0	53.5	118.5*	70.81±23.18 53.0–114.8
HL	28.7	27.5	11.1	29.4	17.3	29.1	22.0	15.6	15.7	14.7	14.2	29.4	21.23±7.16 11.1–29.4
HW	19.9	21.0	7.8	21.6	12.0	20.0	15.6	10.2	10.0	9.8	9.4	21.3	14.88±5.52 7.8–21.6
HH	11.4	12.5	4.9	13.4	7.6	12.0	8.9	6.0	6.1	6.0	6.0	13.5	9.03±3.31 4.9–13.5
SE	13.4	13.0	4.9	14.1	7.9	14.5	10.6	7.6	7.8	7.1	6.8	14.2	10.16±3.50 4.9–14.5
EE	11.0	11.6	3.9	12.6	7.0	10.8	9.0	6.2	6.6	6.1	5.4	11.5	8.48±2.94 3.9–12.6
RW	4.20	4.50	—	4.80	—	4.40	3.40	—	—	—	—	4.39	4.28±0.47 3.40–4.80
RH	2.20	2.30	—	1.80	—	2.30	1.70	—	—	—	—	2.23	2.09±0.27 1.70–2.30
MW	2.50	1.80	—	1.90	—	1.80	1.70	—	—	—	—	2.41	2.02±2.50 1.70–2.30
ML	1.70	1.80	—	2.20	—	1.80	1.30	—	—	—	—	2.10	1.82±0.32 1.30–2.20
DTL	0.92	0.89	—	0.90	—	0.93	0.5	—	—	—	—	0.94	0.85±0.16 0.52–0.94
DTW	0.81	0.81	—	0.93	—	0.70	0.4	—	—	—	—	0.79	0.73±0.20 0.35–0.93
SVL/TL	0.97	—	—	—	0.97	—	0.93	0.99	0.96	1.02	0.96	—	0.97±0.19 0.93–1.02
SVL/HL	3.88	4.17	3.51	4.00	3.88	3.78	3.80	3.67	3.69	3.69	3.60	4.00	3.80±0.19 3.51–4.17
HL/HW	1.44	1.31	1.42	1.36	1.44	1.46	1.41	1.53	1.57	1.50	1.51	1.38	1.44±0.07 1.31–1.57
HL/HH	2.52	2.20	2.27	2.19	2.52	2.43	2.47	2.60	2.57	2.45	2.37	2.18	2.38±0.15 2.18–2.60
SE/EE	1.22	1.12	1.26	1.12	1.22	1.34	1.18	1.23	1.18	1.16	1.26	1.23	1.20±0.07 1.12–1.34
RW/RH	1.91	1.96	—	2.67	—	1.91	2.00	—	—	—	—	1.97	2.07±0.29 1.91–2.67
MW/ML	1.47	1.00	—	0.86	—	1.00	1.31	—	—	—	—	1.15	1.13±0.22 0.86–1.47
RW/MW	1.68	2.50	—	2.53	—	2.44	2.00	—	—	—	—	1.82	2.16±0.37 1.68–2.53
DTL/DTW	1.14	1.10	—	0.97	—	1.33	1.49	—	—	—	—	1.19	1.20±0.18 0.97–1.49
DTL/SVLx100	0.83	0.78	—	0.77	—	0.85	0.62	—	—	—	—	0.80	0.77±0.08 0.62–0.85
DTW/SVLx100	0.73	0.71	—	0.79	—	0.64	0.42	—	—	—	—	0.67	0.66±0.13 0.42–0.79

* incomplete or regenerates

Table 5. Meristic data of the holotype and the topotypic specimens of *Gekko remotus* sp.n. (Abbreviations as in material and methods).

	ZMB 5698	**ZMB 5889**	**ZMB 6239**	**ZMB 7922**	**ZMB 7982**	**ZMB 76976**	**ZMB 76977**	**ZMB 76978**	**ZMB 76979**	**ZMB 76980**	**ZMB 76981**	**ZFMK 20611**	mean±SD min–max
SPL	13/13	13/12	13/13	12/14	12/11	13/13	13/13	13/13	15/12	14/13	12/15	14/13	13.00±0.93 11–15
IF	13/13	12/12	12/12	13/14	10/12	12/12	12/12	12/12	13/13	12/12	14/13	12/13	12.38±0.82 10–14
NP	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	–
N	3/3	3/3	3/3	5/4	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3.13±0.45 3–5
I	1	3	1	1	1	1	1	1	1	1	1	1	1.17±0.58 1–3
S6S	38	45	41	41	41	37	43	40	–	36	40	44	40.55±2.81 36–45
IO	26	25	28	30	29	25	30	27	26	25	31	27	27.42±2.15 25–31
PM	2	2	2	1	2	2	2	2	2	2	2	2	1.92±0.29 1–2
GP	2	5	5	3	3	3	3	6	5	5	3	5	4.00±1.28 2–6
ESRM	6	6	5	5	5	4	6	5	5	6	5	5	5.25±0.62 4–6
SC	5/6	7/6	—	5/6	2/3	4/4	4/3	4/4	4/4	—	—	5/5	4.50±1.25 2–7
DTR	26	24	24	24	26	26	24	24	27	25	25	22	24.75±1.36 22–27
GSDT	10–11	11	10	11	10–11	11	10–11	10–12	11–12	10–11	10	10–11	10.67±0.64 10–12
GTL	3	2–4	3–4	3–4	3–4	1–3	3–5	2–3	3–4	1–2	2–3	3–4	3.00±0.98 1–5
GTC	3	2–3	2–3	3	2	2–3	1–2	2–3	1–3	2	2	3–4	2.33±0.70 1–4
SMC	179	175	—	190	195	205	197	—	—	—	—	184	189.25±10.63 175–205
SR	139	131	—	136	141	142	136	—	—	—	—	136	137.29±3.73 131–142
V	28	25	—	32	31	33	34	—	—	—	—	31	30.63±2.88 25–34
TVF	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	–
LF1	16/16	16/16	—	15/16	16/16	15/16	17/17	17/15	—	15/16	14/15	16/16	15.80±0.77 14–17
LF4	22/22	22/21	—	20/21	22/20	22/22	22/22	20/21	—	23/22	20/21	22/23	21.50±0.95 20–23
LZ1	17/16	16/17	—	18/19	18/16	18/15	17/18	—	—	17/17	16/15	17/17	16.89±1.08 15–19
LZ4	24/25	25/24	—	22/25	25/24	25/24	25/26	22/24	—	25/22	23/23	24/26	24.15±1.23 22–26
FTW	weak	weak	weak	weak	weak	weak	weak	weak	weak	weak	weak	weak	
TFL	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
THL	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
PP	—	44	—	45	38	33	—	—	—	44	42	31	39.57±5.68 31–45
PS	2	—	—	—	—	—	0		—	—	—		1.00±1.41 0–2
PCT	2/1	2/2	—	1	1/2	1/2	2/2	1/1	—	2/2	1/1	1/2	1.55±0.51 1–2
T1W	3	3	4	4	3	3	3	3	4	4	4	3	3.42±0.51 3–4
T3W	4	5	3	3	3	3	3	3	4	3	3	3	3.33±0.65 3–5
S1W	10	12	—	12	13	13	11	12	12	12	12	12	11.91±0.83 10–13
S3W	11	13	—	13	11	14	—	12	14	12	11	13	12.40±1.17 11–14
SC1W	4	4	4	4	4	4	5	4	4	4	4	5	4.17±0.39 4–5
SC3W	4	4	4	4	4	4	4	4	4	4	4	4	4.00±0 4
SC5W	4	4	4	4	4	—	4	4	4	4	4	4	4.00±0 4

Again, all specimens from Palau, adult and juvenile, lack the characteristic dark annulated tail pattern typical for *Gekko vittatus* s.str. (see above).

Distribution. Known only from the type locality (i.e. Palau Islands). *Gekko remotus* sp. n. has been recorded from the Palau Islands Babeldaob, Bablomekang, Beliliou, Kmekumer Island, Malakal, Ngeaur, Ngercheu, Ngeruais, Ngerekebesang, Ngerikeuid Island, Oreor, Ulebsechel and Ulong (Crombie & Pregill 1999).

Natural History. *Gekko remotus* sp. n. is active at night and mostly arboricolous, but has occasionally also been found on house walls. It feeds on insects as well as on fruit. Crombie & Pregill (1999) observed not only strong aggressive (territorial) behaviour among single adult males, but also attacks on non-receptive females. Moreover they reported cannibalism.

Comparisons. Like *Gekko vittatus* (s.l.) *Gekko remotus* sp.n. shows tubercles on the throat and lateral folds which makes both species easily distinguishable from all other species of the genus *Gekko* (Rösler et al. 2011). Moreover, *G. remotus* sp.n. differs from *G. albofasciolatus* Günther, 1867, *G. gecko* (Linnaeus, 1758), *G. reevesi* (Gray, 1831), *G. siamensis* Grossmann & Ulber, 1990, *G. smithii* Gray, 1862, and *G. verreauxi* Tytler, 1864 (a species endemic for the Andaman Islands) by its smaller SVL (117.5 mm vs. >150 mm), and also – except *G. verreauxi*, by a contact of nostril and rostral; it differs from *G. verreauxi* by more dorsal tubercle rows (22 vs. 11).

Gekko athymus Brown & Alcala, 1962, *G. melli* Vogt, 1922, *G. scientiadventura* Rösler, Ziegler, Vu, Herrmann & Böhme, 2004, *G. subpalmatus* Günther, 1864, and *G. tawaensis* Okada, 1956 lack the dorsal tubercles present in *G. remotus* sp.n.

The latter differs from *G. auriverrucosus* Zhou & Liu, 1982, *G. badenii* Szczerabk & Nekrasova, 1994, *G. canhi* Rösler, Ngyuyen, Doan, Ho, Nguyen & Ziegler, 2010, *G. grossmanni* Günther, 1994, *G. hokouensis* Pope, 1928, *G. japonicus* (Schlegel, 1836), *G. petricolus* Taylor, 1962, *G. russeltraini* Ngo, Bauer, Wood & Grismer, 2009, *G. scabridus* Liu & Zhou, 1982, *G. sibatai* Toda, Senhoku, Hikida & Ota, 2008, *G. similignum* Smith, 1923, *G. swinhonis* Günther, 1864, *G. taibaiensis* Song, 1985, *G. takouensis* Ngo & Gamble, 2010, *G. vertebralis* Toda, Sengoku, Hikida & Ota, 2008, *G. vietnamensis* Nguyen, 2010, *G. wenxianensis* Zhou & Wang, 2008, and from *G. yakuensis* Matsui & Okada, 1968 by a higher number of cloacal and femoral pores (31 vs. 0–15), and moreover, except from *G. taibaiensis, G. wenxianensis* and *G. yakuensis*, by non-dilated subcaudals.

Gekko remotus sp.n. differs from *G. crombota* Brown, Oliveros, Siler & Diesmos, 2008, *G. gigante* Brown & Alcala, 1978, *G. mindorensis* Taylor, 1919, *G. palawanensis* Taylor, 1925, *G. porosus* Taylor, 1922, *G. romblon* Brown & Alcala, 1978, and *G. rossi* Brown, Oliveros, Siler & Diesmos, 2009 by less numerous precloacal and femoral pores (31 vs. 50–88) and a lower midbody count (136 vs. 145–211).

The new species is distinguished from *G. ernstkelleri* Rösler, Siler, Brown, Demegillo & Gaulke, 2006, *G. liboensis* Zhao & Liu, 1982, *G. palmatus* Boulenger, 1907, and *G. similignum* Smith, 1923 by its numerous, densely placed tubercles on the forelimb, and by a bigger SVL (117.5 vs. 82.5–92.1 mm). *G. canaensis* Ngo & Gamble, 2011 lacks tubercles on the limbs (present in *G. remotus* sp.n.), has fewer precloacal pores (14–18 vs. 31) and widened subcaudals. *G. carusadensis* Linkem, Siler, Diesmos, Sy & Brown, 2010 is smaller than *G. remotus* sp.n. and has a smaller SVL (97.2 versus 117.5 mm), more interorbitals (35–48 vs. 27) and more precoacal and femoral pores (46–50 vs. 31), moreover widened subcaudals.

G. remotus sp. n. differs from *G. chinensis* Gray, 1942 by only weakly developed webbing between fingers and toes (distinct and well developed in *G. chinensis*) and by its larger SVL (117.5 vs. 72 mm), more subdigital lamellae under the 1st and 4th toe (17 vs. 8–10 and 24–26 vs. 12–19 respectively), and non-widened subcaudals.

G. kikuchii Oshima, 1912 has a smaller SVL than *G. remotus* sp.n. (80 vs. 117.5 mm) and has more precloacal and femoral pores (48 vs. 31) and has moreover widened subcaudals. *G. monarchus* (Schlegel, 1836) has more interorbitals than *G. remotus* sp.n. (34–35 vs. 27) a higher midbody count (148–177 vs. 136) and widened subcaudals. Finally, the endemic Thai species *G. nutaphandi* Bauer, Sumontha & Pauwels, 2008 has, in contrast to *G. remotus* sp.n., a nostril without contact to the rostral, and both species are moreover distinguished by different numbers of precloacal and femoral pores, viz. 17–22 vs. 31.

Etymology. The species name is derived from the Latin adjective *remotus, -a, -um*, meaning far away, and refers to the remote, isolated distribution range of the new species.

DISCUSSION

The genus *Gekko* contains several phylogenetic lines or clades with different geographic centres. Molecular divergence within the *Gekko vittatus* group (mitochondrial and nuclear genes: ND2, tRNA, RAG-1, PDC) revealed the distinctness of *G. remotus* sp.n. from all other members of this group (Rösler et al. 2011). In addition to the differences in scalation and colour pattern, *G. remotus* sp.n. differs from *G. vittatus* s.str. in some behavioural traits: *G. remotus* have a strictly solitary lifestyle including aggressive behaviour against conspecifics and even cannibalism, whereas *G. vittatus* live in familial groups and perform brood care (Treu 2001). The herpetofauna of the Palau Islands is dominated by faunal elements of New Guinean, Solomonian or Moluccan origin (Crombie & Pregill 1999). The northernmost representative of the *Gekko vittatus* group so far known is from Pulau Morotai, and also the records from Halmahera and Pulau Waigeo are geographically closer to the Palau islands as for instance New Guinea or the Admiralty Islands (De Rooij 1915). Further studies are, however, necessary to elucidate, from where the ancestors of *Gekko remotus* sp.n. may have reached the Palau Islands.

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APPENDIX

Gekko remotus sp. n.
ZFMK 20611 (holotype) — male, Palau islands (= Republic of Palau); ZMB 5698 — female, Palau islands (= Republic of Palau); ZMB 5889 — male, Palau islands (= Republic of Palau); ZMB 6239 — juvenile, Palau islands (= Republic of Palau); ZMB 7922 — male, Palau islands (= Republic of Palau); ZMB 7982 — male, Palau islands (= Republic of Palau); ZMB 76976–76977 — male, female, Palau islands (= Republic of Palau); ZMB 76978–76981 — 4 juvenile, Palau islands (= Republic of Palau).

Gekko vittatus s. str.
CPHR 393 — female, Dutch New Guinea; ZFMK 20612 — male,, Amboina (= Pulau Ambon), Indonesia; ZMB 7940 — male, Wokan, Aru islands, Indonesia; ZMB 8788 — female, Mysore, Kordo (Schouten Group), Indonesia; ZMB 9457 — male, Ratavul, New Britain, Bismark archipelago ago Papua New Guinea; ZMB 14628–14632 — 1 male, 2 females, 2 juveniles, Ralum, Gazelle peninsula, New Britain, Bismark archipelago ago Papua New Guinea; ZMB 14650 — female, Mioko, Duke or York Group, Papua New Guinea; ZMB 14651–14652 — 2 males, Ralum, Gazelle peninsula, New Britain, Bismark archipelago ago Papua New Guinea; ZMB 76982–76983 — 2 juveniles, Ralum, Gazelle Halbinsel, Neubrittanien, Bismark Archipel, Papua New Guinea; ZSM 285/0/1 — male, Amboina (=Pulau Ambon), Indonesia; ZSM 30/1972/1–30/1972/9 — 4 males, 5 females, Asmat, near Agats, Irian Jaya (Western New Guinea), Indonesia; ZSM 105/1979 — female, Mt. Bosavi, Didessa, southern highland, Papua New Guinea; ZSM 106/1979 — female, Airdhills, Papua New Guinea; ZSM 507/1998 — male, 54 km south from Nabire (800 m a.s.l.), Irian Jaya (= Western New Guinea), Indonesia.

Gecko trachylaemus Peters, 1872
ZMB 7511 (holotype) – male, Northern Australia.

Platydactylus bivittatus (Duméril & Bibron, 1836)
MNHN 6714 (syntype) – male, Nouvelle-Guinée (= New Guinea), Indonesia; MNHN 2285 (syntype) – female, "□le Waigiou" (= Pulau W), Indonesia.

Gekko vittatus- phenotype 3
ZMB 48737–48738 — 2 males, Kei islands, Moluccas, Indonesia.

Gekko vittatus- phenotype 4
SMF 9157–9159 — 3 males, Nissan atoll, Green Islands, Papua New Guinea.

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The herpetofauna of the Bijagós archipelago, Guinea-Bissau (West Africa) and a first country-wide checklist

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Abstract. An annotated checklist of amphibians and reptiles from the Bijagós archipelago (Guinea-Bissau) with comments on the species' distribution, systematics and natural history traits is presented here for the first time. During two field surveys 13 anurans and 17 reptile species were recorded from the archipelago of which several species represent either first records for the islands, i.e., *Silurana tropicalis*, *Hemisus g. guineensis*, *Leptopelis viridis*, *Hemidactylus angulatus, Chamaeleo gracilis, Trachylepis perrotetii*, *Philothamnus heterodermus*, *Toxicodryas blandingii, Naja melanoleuca* and *Thelotornis kirtlandii* or first country records, i.e., *Amietophrynus maculatus*, *Ptychadena pumilio*, *P. bibroni*, *Phrynobatrachus calcaratus*, *P. francisci*, *Leptopelis bufonides*, *Hyperolius occidentalis*, *H. nitidulus*, *H. spatzi, Kassina senegalensis* and *Thrasops occidentalis.* Species diversity reflects savanna and forest elements and a complete herpetofaunal checklist of the country is provided.

Key words. West Africa, Guinea-Bissau, Bijagós archipelago, herpetofauna, first country records.

INTRODUCTION

The former Portugese colony Guinea-Bissau is an autonomous country since 1974 and is bordered by Senegal in the north, Guinea in the east and south, and by the Atlantic Ocean in the west (Fig. 1). It covers an area of approximately 36,125 km² between 10°52' and 12°40' N and 13°38' and 16°43' W. According to recent data, its human population is estimated at 1.596.677 (July 2011, The World Factbook 2012). The country can be divided into three characteristic types of landscape (1) scattered plain islands together with the flooded valleys describe the coastal zone, (2) coastal estuaries or "rias" outlined with mangrove swamps extend deep into the continent on the main rivers Rio Cacheu, Rio Mansoa, Rio Geba, Rio Grande de Buba and Rio Cacine, and (3) this second zone borders a moist savannah on a very low elevated shelf with the highest peak of 310 m a.s.l in the southeast of Guinea-Bissau, the foothills of the Fouta Djallon.

The Bijagós archipelago consists of 83 islands and islets with a surface of about 1,500 km², distributed across an area of about 11,000 km² (Fortes et al. 1998). According to IUCN (1991) 20 islands are permanently inhabited, 26 seasonal inhabited and 37 uninhabited. The islands soils are ferralitic, hydromorphic and halomorphic (Said & Fonseca 1990). The four islands surveyed within the study are Orango (158 km²), Bubaque (43 km²), Imbone (19 km²), and Soga Island (13 km²) (Fig. 1).

Guinea-Bissau's tropical climate is characterised by a dry season (November to May), and a wet season from June to October with average annual rainfall between 1,500–2,000 mm (IUCN 1992), whereas on the islands and the southeast of the mainland annual precipitation increases to 2,250–3,000 mm (Joop 1968). The Sudan-Zone in the north, the Guinea-Congolian zone and the West African Forest Block, in the south, frame Guinea-Bissau. A Guinean forest-savanna mosaic is the characteristic ecoregion of the country. The moist tropical Guinea savannas are of climatic origin, which are defined according to the length of the dry season, lasting two to six months. Of the edaphic-based vegetation, mangrove forests reflect the major formation. Originally mangrove forests represented 11 % of all vegetation of Guinea-Bissau, with 30 % of mangroves distributed on the Bijagós Islands. Dominant taxa are *Rhizophora racemosa, R. mangle,* and *Avicennia africana.*

On the islands of Orango and Bubaque, the inland vegetation, behind the mangroves, is characterized by a belt of littoral bush (Limoges & Robillard 1991a) and floral elements have xeromorphic leaves and > 5 m tall e.g., *Hibiscus tiliaceus* (Malvaceae). *Chrysobalanus orbicularis* (Chrysobalanaceae) and *Ipomoea pes-caprae* (Convolvulaceae) are interspersed with Baobab, *Adansonia digitata* (Bombacaceae) and dense undergrowth e.g., *Strophantus* spp. (Apocynaceae). Also of edaphic origin are palm savannas dominated by the oil palm (*Elaëis guineeensis*),

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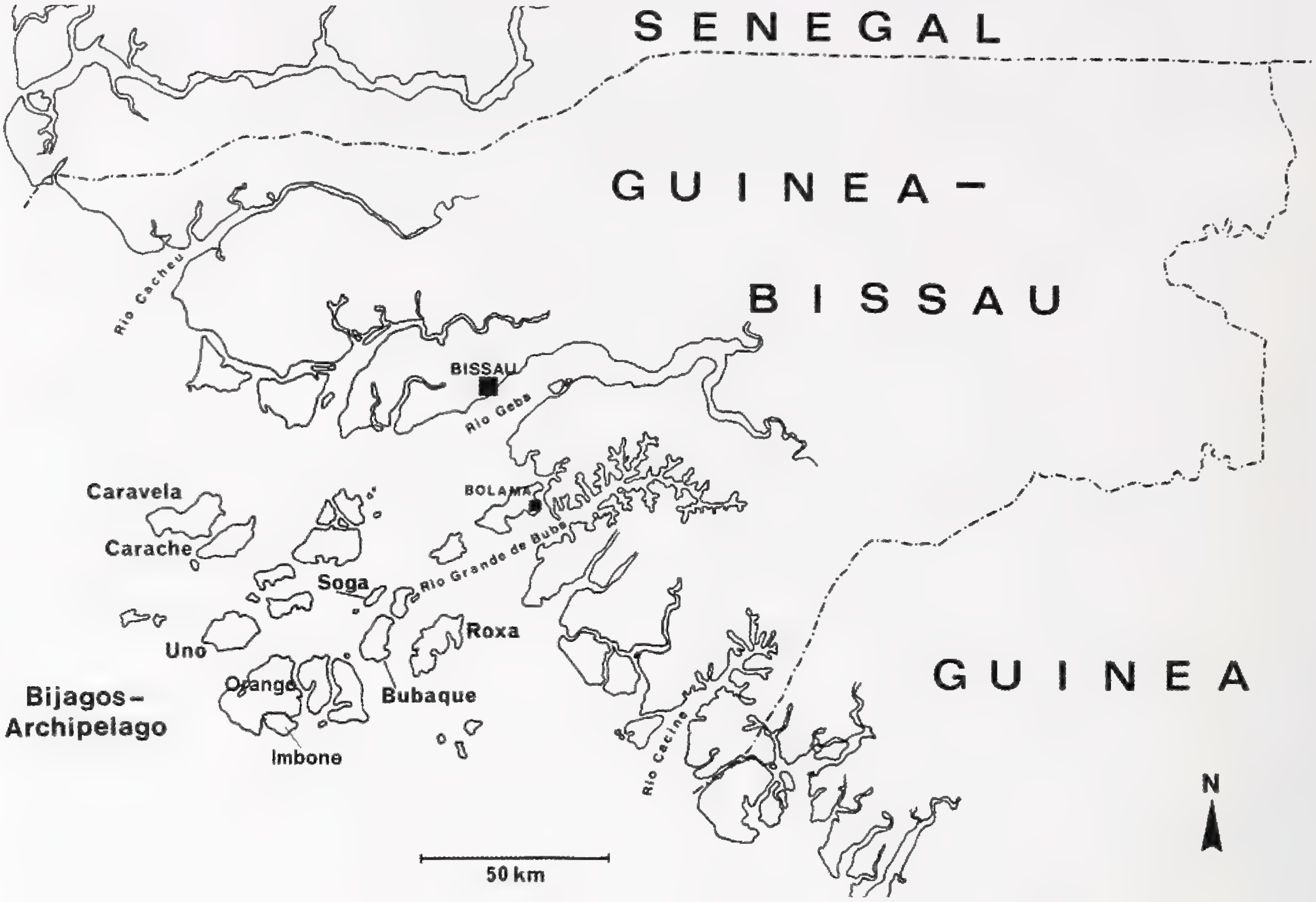

Fig. 1. Map of Guinea-Bissau; Capital Bissau (black square); major Bijagós islands are named.

the next characteristic vegetation belt when moving towards inland. These are bordered by "depressions" of moist grass savanna (*Hyparrhenia*, *Andropogon*). Also *Raphia exica* (Arecaceae) is a characteristic element of these "valleys" (Limoges & Robillard 1991a). Evergreen bush-forests (up to 8 m tall) follow the partly swampy grass savannas inland e.g., *Mussaenda* spp. (Rubiaceae) or *Trema guineensis* (Ulmaceae) (Knapp 1973). Rich rainfall indicates patches of primary forest, representing the natural vegetation cover. According to Limoges & Robillard (1991a) these consist of half-moist and half-dry three-storied primary forests. In half-moist forests the upper story (canopy height around 30 m) is characterized by *Chlorophora regia* (Moraceae), and *Afzelia africana* (Caesalpiniaceae). *Elaiës guineensis* is the dominant species in the story below, whereas the undergrowth comprises shrubs and palm-shoots. Apart from these moist forests, which are distributed in the southern archipelago, the northern islands also support half-dry primary forests characterized by *Khaya senegalensis* (Meliaceae) and *Parinari excelsa* (Chrysobalanaceae). There are close phylogenetic relationships to the coastal regions of Guinea, Sierra Leone and Liberia (belonging to the western Guinean lowland forests), thus Guinea-Bissau's flora is assigned to the West African tropical Flora (IUCN 1986). Therefore, the flora of Guinea-Bissau consists of typical Sudano-elements e.g., *Acacia senegal, Dicherostachys cinerea* (Mimosaceae) together with elements of the tropical lowland evergreen rain forests of West Africa e.g., *Trichilia prieureana* (Meliaceae).

J. V. Barboza du Bocage published first data of Guinea-Bissau's herpetofauna in 1867. The majority of specimens originated from Bolama Isl. and Bissau (Bocage 1867, 1873, 1896a). Costa Martins, the Assistant Director of the Public Health Office of the Cabo Verde Archipelago made one of these collections (Bocage 1896b). Later, between 1898 and 1908, Francisco Newton who collected for the Lisbon museum, conducted inventories of the mainland herpetofauna (e.g. Antula [Bissau], Bambadinca, Buba, Geba, Farim, Sambel n'antá, including the nearby island Bolama Isl.). Boulenger (1905) identified and published an amphibian and reptile collection made by Leonardo Fea in 1898–1900. These specimens originated from Bissau, Bolama Isl., Farim, Cacheu, Cassine and Cambec. J. Bethencourt Ferreira (1902) published a checklist of amphibians and reptiles collected by Francisco Newton in 1900/1901. Some findings were recorded from Bolama Isl., the major data though originate from

Table 1. Habitat composition of the Bijagós islands. Source: Limoges & Robillard (1991).

Habitat	% of the archipelago
Moist forest	0.6
Closed Palm forest	25.8
Open Palm forest	5.8
Bush land	3.6
Forest savannah	5.6
Grass savannah	1.4
Moist savannah	6.9
Cultivated savannah	0.9
Mangroves	31.7

the mainland. Almost 40 years later in 1937–1938, Dr. Albert Monard, perpetuated herpetological research of Guinea-Bissau publishing many new records (Monard 1940a, b). The most detailed herpetofaunal surveys, as a program of the Portuguese inventory missions "Junta de Investigacoes Colonais" were conducted in 1945–1946, supervised by Fernando Frade. These collections were examined and published by Manaças (1947, 1949, 1950), in particular with reference to lizards, while Frade (1950) published the research results of the Varanidae, Typhlopidae, Leptyphlopidae and Colubridae. A small reptile collection was provided by Naurois (1969), who conducted a survey on the reproductive cycles of birds in the West African coastal zone from the Western Sahara to Guinea. He mentioned taxa from the islands Bubaque and Uno (Fig. 1). This collection was identified by Jean Guibé from the "Muséum National d'Histoire Naturelle" in Paris.

Due to the isolation of the Bijagós islands, not including Bolama Island (close to the mainland), no detailed field studies document the herpetofauna of the archipelago so far. In May 1991, Benoît Limoges and Marie-Josée Robillard carried out the most recent inventory of the insular vertebrate fauna (excluding amphibians) with the focus to establish protected areas (Limoges & Robillard 1991b). The present paper provides a first overview of the herpetofauna of the Bijagós archipelago including a checklist of all amphibians and reptiles recorded in Guinea-Bissau.

MATERIAL AND METHODS

Guinea-Bissau was visited twice; the initial survey was conducted in April and May 1993, while the second field survey was carried out mid May until mid August 1994, the transition from the dry to the wet season. The basecamp was on Bubaque Island, while three islands (Soga, Orango and Imbone) were visisted by motorboat. Due to this fact most specimens originate from Bubaque. The island of Orango was visited for eleven, while Imbone only for four days.

All voucher specimens were sampled by visual encounter, noosing and and setting nets during day and night excursions. Occasionally villagers captured specimens, or reported on taxa observed. Several taxa were collected dead after being killed by locals. Voucher specimens were preserved in 70 % ethanol and deposited in the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK) in Bonn. For additional taxonomic analysis aforementioned herpetological collection of R. de Naurois (1969) in 1961/62, from the Muséum National d'Histoire Naturelle in Paris/ France, was taken into account. Comparatively, collections from the localities Macenta and Sérédou, both in Guinea, were analysed.

RESULTS

Annotated Herpetofaunal Checklist of the Bijagós archipelago

AMPHIBIA

Arthroleptidae
***Leptopelis viridis* (Günther, 1869)**
Common name.– Savanna Tree Frog
Specimens examined.– Three, ZFMK 58265: Orango Isl., 7. VII.1994. 2 uncatalogued live specimens, Orango Isl. & Bubaque Isl., 2. VIII. 1994.
Distribution.– Schiøtz (1967) re-identified Boulenger's holotype of *Leptopelis hyloides* as a specimen of *L. viridis.* Thus, the type locality "Bolama" previously assigned to "*L. hyloides*" represents the first record for Guinea-Bissau. This study's findings provide the first record from the archipelago and the second record for the country after 88 years (Fig. 2).
Remarks.– The specimens were found in a dense secondary forest patch, surrounded by water basins (presumably used for livestock), with diverse herbaceous layers and aquatic plants. All specimens were located on branches of shrubs (around 1m) adjacent to the water sites. Advertisement calls were produced between 20.00h and 0.00h. *L. viridis* was associated with *Hyperolius occidentalis* and *Kassina senegalensis*, and represented the only arboreal species within this anuran community. At the time of the study this species was tentatively identified as *Leptopelis* cf. *hyloides* (Boesl 1995).

***Leptopelis bufonides* Schiøtz, 1967**
Common name.– Ground Tree Frog.
Specimens examined.– Five, ZFMK 58263–64, 58266–67: Orango Isl., 7.VII.1994. One uncatalogued live specimen, Bubaque Isl., 28.VII. 1994.

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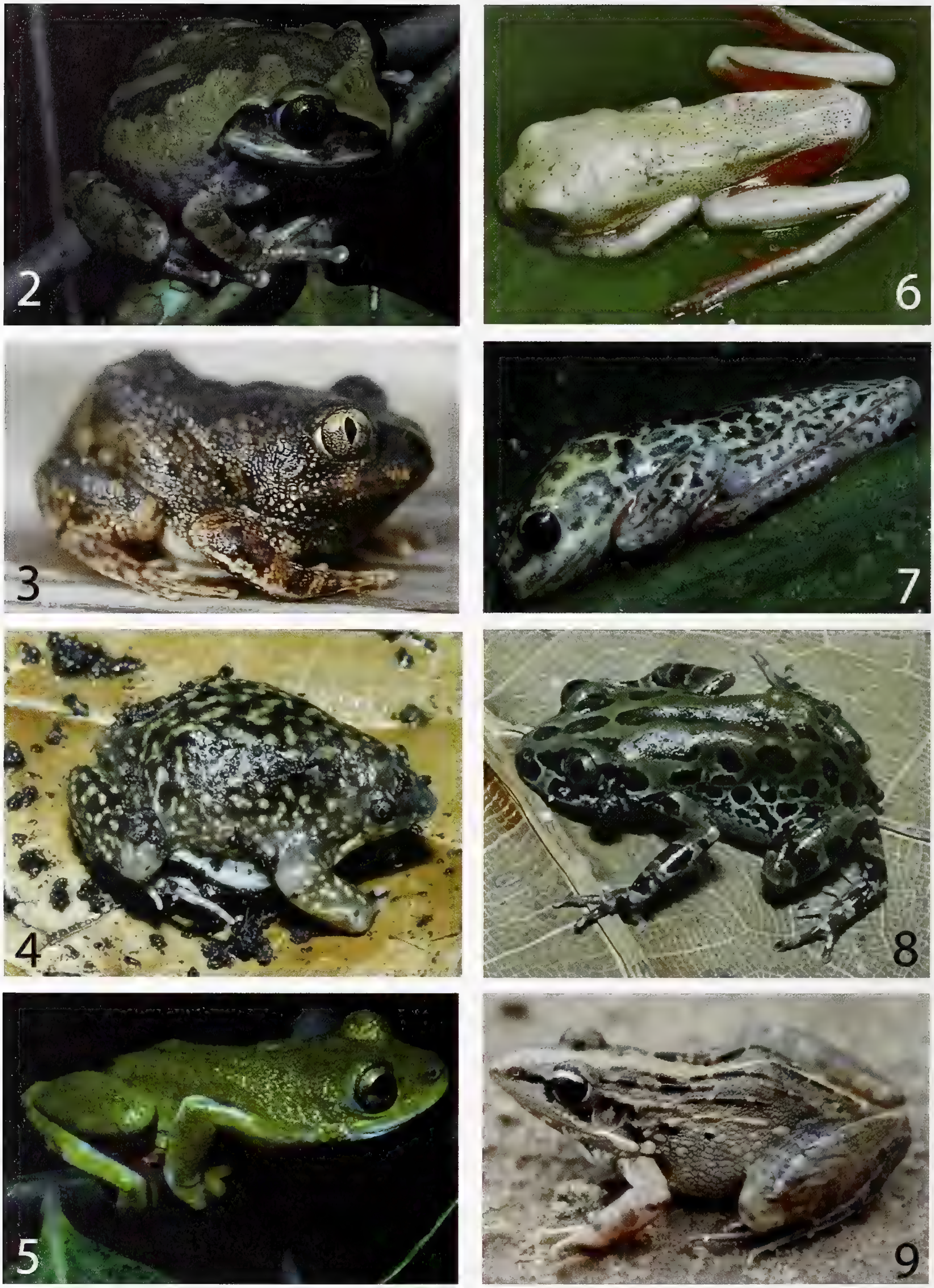

Figs 2–9. **2.** *Leptopelis viridis*, Bubaque Isl.; **3.** *Leptopelis bufonides*, Orango Isl.; **4.** *Hemisus g. guineensis*, Bubaque Isl.; **5.** *Hyperolius occidentalis*, Bubaque Isl.; **6.** *Hyperolius spatzi*, Bubaque Isl.; **7.** *Hyperolius* spec., Bubaque Isl.; **8.** *Kassina senegalensis*, Bubaque Isl.; **9.** *Ptychadena bibroni*, Bubaque Isl.

Distribution.– *L. bufonides* is restricted to West African savanna, and so far has been recorded from Senegal (Böhme 1978), the Gambia (Barnett et al. 2001), Ghana (Schiøtz 1967) Benin (Gilles et al. 2006), Nigeria (Walker 1968) and northern Cameroon (Amiet 2004). The present records are the first from the archipelago and Guinea-Bissau (Fig. 3).

Remarks.– This second *Leptopelis* savanna species occurs in syntopy with *L. viridis* and interspecific competition can be ruled out as this species appears to display strictly terrestrial behaviour, even calling from land (Gilles et al. 2006). Both localities of *L. bufonides* are characterised as savanna habitats. In one case (Orango Isl.) the habitat was arid-adapted vegetation dominated by grasses, no tree canopy, with some isolated *Acacia* trees. Three specimens were captured in a well. One frog, producing "advertisement calls", was located in a palm leaf about 2.5 m above the ground, and 5 m away from the coast (Imbone Isl.). On 8 July 1994 no fresh water could be located nearby. The species depends on temporary pools during the wet season.

Bufonidae

***Amietophrynus maculatus* (Hallowell, 1854)**

Common name.– Hallowell's Toad

Specimens examined.– Two, ZFMK 58268–69: Eticoga (Orango Isl.); 12./13.VI.1994.

Distribution.– This study documents first records from Guinea-Bissau. However, a collection of 197 specimens of *Amietophrynus regularis*, made by Frade 1945/1946 (Manaças 1949), could include *A. maculatus*. This toad was given species level rank by Hulselmans (1970), and isolated from the *A. regularis*-complex by Laurent (1972a). However, none of Frade's specimens originated from the archipelago.

Remarks.– Both specimens were collected in the village Eticoga, Orango Isl., characterised by diverse plantations (*Anacardium occidentale*), and paddy fields. A depression adjacent to the village cottages represents a large pond in the wet season. Large parts of this island are characterized by savanna-like vegetation, with many plants adapted to dry periods.

Hemisotidae

***Hemisus guineensis guineensis* Cope, 1865**

Common name.– Guinea Shovelsnout Frog

Specimens examined.– Two, ZFMK 58259: female, Eticoga (Orango Isl.), 7.VII.1994. ZFMK 58260: male, Bubaque Isl., 30.VII.1994.

Distribution.– A first record from Guinea-Bissau was provided by Boulenger in 1905, who referred to the species *Hemisus marmoratus* from Bolama Isl. close to the mainland (Laurent 1972b). The specimens in this study are the second record after 88 years, and represent the first record from the archipelago.

Remarks.– ZFMK 58259 was captured by locals on 19.VI.1994 (Fig. 4). For habitat descriptions refer to *Amietophrynus maculatus*. The remaining three specimens were collected in the morning on a moist shady slope. The habitat was at the edge of a depression, which most likely is filled with water during the wet season. Small pools were observed amid the clearing bordered by densely vegetated slopes. The loose soil was a mixture of clays and sands, and was covered by a layer of rotten leaves interspersed with seedlings. Andersson (1937) records termites as stomach contents in the taxon *H. marmoratus sudanensis*. The specimens collected in this study were feeding on termites at daylight. When grasped the frogs inflated their lungs and pressed their bodies to the forest floor. This anti-predator adaptation could disguise the frog, making it difficult for a predator to identify it as a tetrapod. Spieler (1997) observed this behaviour in nest guarding females.

Hyperoliidae

***Hyperolius nitidulus* Peters, 1875**

Common name.– Peter's Reed Frog.

Specimens examined.– One uncatalogued live specimen, Bubaque Isl., 10.VII.1994.

Distribution.– This is the first record from the archipelago and Guinea-Bissau.

Remarks.– Rödel et al. (2010) have shown that this species is morphologically and genetically distinct from *H. spatzi*, and both species are here recorded from Guinea-Bissau for the first time. No advertisement calls were heard during the entire field survey, most likely indicating that the reproductive period had not begun. This assumed time shift might reduce interspecific competition with *H. occidentalis*, with both species utilizing the same microhabitats.

***Hyperolius occidentalis* Schiøtz, 1967**

Common name.– Western Reed Frog.

Specimens examined.– Five, ZFMK 58278–80 males, (12.–27.VII.1994); ZFMK 58281 (male), ZFMK 58282 (female), 10.VIII.1994; all Bubaque Isl. (also see Table 2).

Distribution.– This species record is the first from the archipelago and from Guinea-Bissau (Fig. 5).

Remarks.– According to villagers the secondary forest patch, where the species was recorded, was unaffected by fires for the previous 3–4 years. Slash-and-burn activities for rice cultivation, create clearings ("bolanhas") bordered by secondary forest. During the wet season they resemble shallow lakes, providing favourable living conditions for *H. occidentalis*, during both the dry and wet seasons. This species does not occur in primary forest with closed canopy or in Sudan-savanna formations, where secondary or gallery forests are not present. For further habitat descriptions see *Leptopelis viridis*. The species was ob-

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served in syntopy with *L. viridis* and *Kassina senegalensis*. *H. occidentalis* occurs sympatrically with *H. picturatus*, the latter not having exposed calling sites (Schiøtz 1967). All specimens were localised in vegetation approximately 0.5 m above the ground when advertisement calls were recorded. The majority of specimens were observed on leaf surfaces or twigs of shrubs. During the dry season and heat of the day, one light yellow specimen was observed on a palm leaf in the characteristic resting position reducing evaporative water loss (Spieler 1997).

Hyperolius spatzi Ahl, 1931

Common name.– Ahl's Reed Frog.
Specimens examined.– One, ZFMK 58291: Bubaque Isl., 28.VI.–12.VII.1994.
Distribution.– The record of *H. spatzi* from Bubaque Isl. represents the first record for the country and thus the most southern distribution of the species range (Fig. 6). *H. spatzi* has been recorded in Senegal and in the Gambia (Böhme 1978; Rödel et al. 2010; Schiøtz 1971).
Remarks.– The live specimen was observed amid a secondary forest patch on a white wall of a small abandoned house at approximately 2.5 m height. Böhme (1993) reported a similar habitat for the form *nitidulus*. According to Schiøtz (1971), *H. spatzi*, as a typical savanna species, is associated with habitats that resemble those of *H. occidentalis* (see above).

Hyperolius spec.

Specimens examined.– One, ZFMK 58277: Bubaque Isl., 28.VI.1994.
Distribution.– This conspicuous phenotype does not resemble any morph of the region (Senegal to Guinea) (Fig. 7). It has been recognized as a new colour morph, and is recorded for the first time from Guinea-Bissau, and may represent a new taxon.
Remarks.– The specimen's snout-vent length is 26 mm. Compared to the other three species, there are some striking differences in colouration: more than half of the throat region is dotted and the belly is orange/red; dorsum distinctly marbled with black markings on a white background; interior part of the front limbs and femora, as well as the inside and underside of tibia and tarsus are coloured bright orange/red; iris is blackish. A villager collected the specimen from a secondary habitat, characterised by stands of *E. guineensis* and 3–5 m shrubs. The distinct pattern may be a form of mimesis, resembling bird faeces.

Kassina senegalensis (Duméril & Bibron, 1841)

Common name.– Running Frog.
Specimens examined.– Two, ZFMK 58261–62: male & female, Bubaque Isl., 13.VII.1994.
Distribution.– Locality records on the archipelago present the species' northwesternmost distribution and are the first from Guinea-Bissau (Fig. 8).
Remarks.– For habitat descriptions also refer to *Leptopelis bufonides*. The water basins (resembling troughs) measured 3 m in length and 1.5 m in width; water depth was approximately 30 cm. The first heavy rains of the wet season filled these basins. Initially this terrestrial species was acoustically recorded under dense creeping herbaceous plants (Convolvulaceae), providing excellent shelter. Approximately 2 m high shrubs surrounded the troughs. Advertisement calls were first recorded in early June, always after sunset, around 20h00. The characteristic "plopping sounds" were first introduced by a solitary male acting as the initiator of the population, as described by Herrmann (1993). Consequently, all other males commenced calling, answering previous calls, and producing a distinctive call overlap as is described by Grafe (1999). These calls drowned out calls of other species, i.e., *Leptopelis bufonides* and *Hyperolius occidentalis*. Calling males were well camouflaged in their microhabitat. Even though calling sites were located approximately 30 cm away, it was not possible to make out most of the individuals. During several capture attempts it was observed that the frogs secretively crept to other sites sheltered by the dense herb layers.

Pipidae

Silurana tropicalis Gray, 1864

Common name.– Tropical Clawed Frog
Specimens examined.– 21, ZFMK 58253–254: two subadults, Bubaque Isl., 27.VI.1994. ZFMK 58255–258: four adults, Imbone Isl., 08.VII.1994. ZFMK 58292: series of 15 larvae, Bubaque Isl., 29.VI.1994.
Distribution.– The island records within this study (from Bubaque and Imbone) represent the first records from the archipelago. Close to the mainland the species was recorded from Bolama Isl. (Boulenger 1905), Bissau, Março and Calequisse (Manaças 1947, 1951a).
Remarks.– The two subadult specimens and tadpoles were captured in a 1m² well amid dense secondary forest. The water in the well was clear, and depth was about 2 m. The site was about 10 m from a formation of *Avicennia africana*. The adult specimens were collected in deeper puddles in the only village on Imbone Isl. Both locations were almost closed by the canopy. Several behavioural observations were made at the well and under captive conditions. The breathing procedure of the frogs lasted about 10 seconds. The frogs emerged almost vertically from the dark bottom of the well, and submerged in the same manner. Besides the occurrence of adult frogs tadpoles of different metamorphic stages were also observed. Nieuwkoop & Farber (in Arnoult & Lamotte 1968) described stage "45" without barbles, which was observed together with "tentacled stages" resembling fish schools, about 10–25 cm below the water surface. The tentacled tadpoles never had contact with the base of the well or with its steep edges. It was difficult to make out distinct swim-

ming movements of the tadpoles. Only slight undulations of the tail filaments were observed, and breath-taking was practised in the same way as the adult frogs. The translucent appearance of all larval stages may represent a protection against predators from water and land. Predators from under water probably have difficulties in approaching an individual tadpole, due to their transparency and back-lit conditions. Besides, light reflection on the water surface also handicaps potential predators approaching from the land to follow the slow moving.

Tadpoles and their post-metamorphic stages were kept together in water tank. It was observed that subadult frogs fed on their tadpoles. The tank did not provide natural conditions, thus schooling behaviour was absent, and space was distinctly restricted. If stress behaviour was not responsible for cannibalism under captive conditions, it may also be a natural feeding behaviour of the metamorphic frogs to feed on their larvae, thus to minimise cannibalism, schooling behaviour and transparency may play a crucial role. Cannibalism enables the parental population to "exploit the nutrient resource, the energy of primary production by algae and micro-organisms" (Tinsley et al. 1996). Also, taking into consideration that during the dry season permanent water bodies are rare and overland migration probably is negligible, however in other Pipidae spp. i.e. *Xenopus muelleri* overland migration over long distances of has been observed (Loveridge 1953; in Tinsley et al. 1996).

Ptychadenidae

Ptychadena bibroni (Hallowell, 1845)

Common name.– Broad-banded Grass Frog.

Specimens examined.– Seven, ZFMK 58288 (female) and 58289 (male), Orango Isl., 15./16.VI.1994. ZFMK 58283–87: one female (58283), all others males, Bubaque Isl., 19.VII.1994.

Distribution.– These island records also represent the first for the country (Fig. 9).

Remarks.– For habitat descriptions of the two specimens from Orango Isl. see *Leptopelis bufonides*. The remaining individuals were captured in a well in Bubaque village (approximately 30 m from the sea) between houses and secondary vegetation. The ZFMK specimens were collected between June and November similar to records of Gruschwitz et al. (1991). Active *Ptychadena bibroni* have been recorded during the first rains of the wet season.

Phrynobatrachus calcaratus (Peters, 1863)

Common name.– Boutry River Frog

Specimens examined.– Two, ZFMK 58273, 58275: males, Bubaque Isl., 12.VII.1994.

Distribution.– This study records *P. calcaratus* from the archipelago and Guinea-Bissau for the first time based on findings provided by Perret (1988) (Fig. 10).

Remarks.– Irregular but intense rainfalls brought out this species after the dry season in mid June. Unidentified froglets of this genus (ZFMK 58276) were also observed in early August within the anuran community described below (see *Leptopelis viridis*). For habitat descriptions on Bubaque Isl. see *Ptychadena bibroni.*

Phrynobatrachus francisci Boulenger, 1912

Common name.– Warty River Frog.

Specimens examined.– Six, ZFMK 58270–72: males, Orango Isl., 19.VI.1994. ZFMK 58274: male, Bubaque Isl., 12.VII.1994. ZFMK 58276: male, Bubaque, 27.VII.1994.

Distribution.– This study records *P. francisci* from the archipelago and also represents the first record from Guinea-Bissau (Fig. 11).

Remarks.– The collecting locality on Orango Isl. is described below (see *Leptopelis bufonides*). The specimens from Bubaque Isl. were found during the construction of a well in moist soil and in a well associated with *Ptychadena bibroni* (see above). Shrubby vegetation with a few sheltering coconut palms amid some houses characterises the habitat. These findings support the fact that *P. francisci* is found near both artificial and natural water bodies during the dry season. Compared to the nocturnal *P. natalensis*, *P. francisci* is explicitly diurnal and even heliophilic, as characterized by Lamotte & Xavier (1966: 361). Gruschwitz et al. (1991) observed *P. francisci* at daytime under bark, litter and logs.

Ptychadena pumilio (Boulenger, 1920)

Common name.– Little Rocket Frog.

Specimens examined.– One, ZFMK 58290: male, Orango Isl., 14.VI.1994.

Distribution.– The single specimen collected represents the first record from Guinea-Bissau.

Remarks.– The voucher specimen was trapped in a well together with *Leptopelis bufonides*, *Ptychadena maccarthyensis*, and *Phrynobatrachus francisci.* The well was surrounded by grass savanna, and according to Rödel (1995) and Schiøtz (1999) all four species inhabit savanna. The onset of the wet season initiated the first activities of *P. pumilio*. For detailed habitat descriptions see *Leptopelis bufonides*. Descriptions of 31 specimens collected on the mainland, published by Manaças (1949), do not allow unequivocal species identification. Referring to the description of the lateral position of the vocal sac by Manaças (1949), *Ptychadena* [*bibroni*] *arnei* is probably the species involved, however future examinations of that collection may prove to be helpful.

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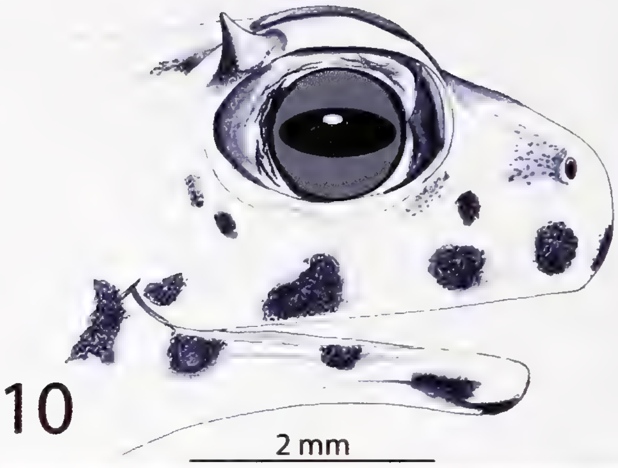

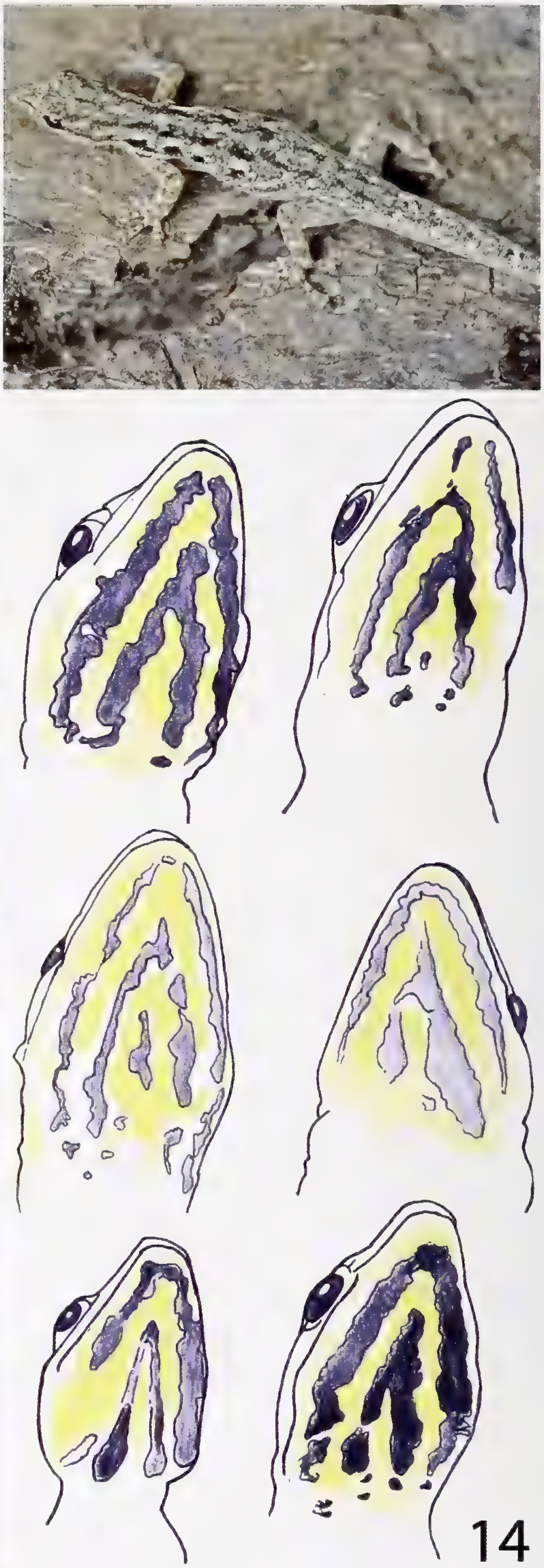

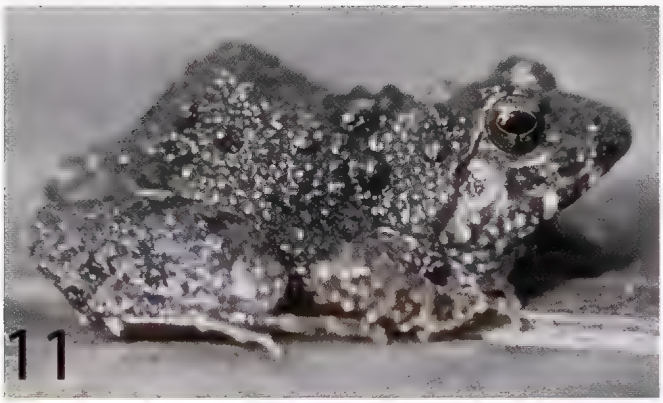

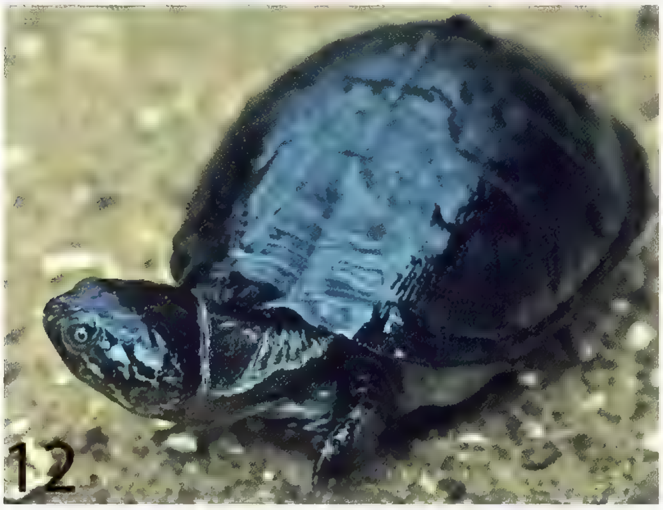

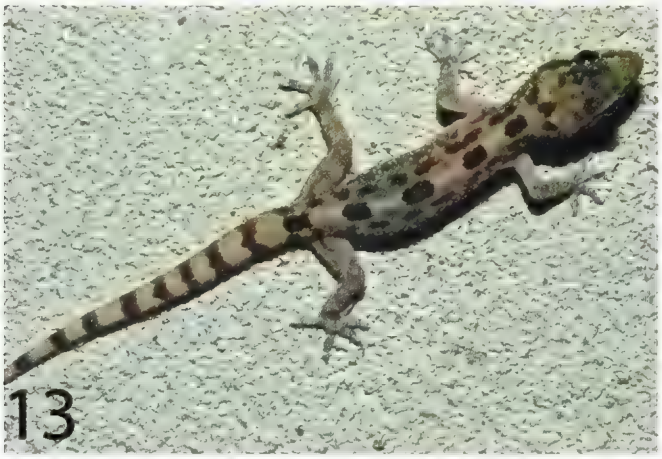

Figs 10–14. **10.** *Phrynobatrachus calcaratus*, Bubaque Isl.; **11.** *Phrynobatrachus francisci*, Orango Isl.; **12.** *Pelusios castaneus*, Bubaque Isl.; **13.** *Hemidactylus angulatus*, Orango Isl., **14.** *Lygodactylus gutturalis* (above), Soga Isl. (below, throat pattern of male individuals).

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TESTUDINES

Cheloniidae

***Caretta caretta* (Linnaeus, 1758)**
Common names.– Loggerhead Turtle; P: Tartaruga caretta.
Distribution.– The species was observed throughout the entire archipelago (Limoges 1989)
Remarks.– To date, however, nesting sites have never been recorded from the archipelago; the species is very rare and only one more record in 2003 provides evidence of the species roaming around the islands (Catry et al. 2009).

***Chelonia mydas* (Linnaeus, 1758)**
Common names.– Green Turtle; P: Tartaruga verde; C: Tartaruga preto; B: Entchunko (Orango Isl.).
Distribution.– This is the most common marine turtle species of the archipelago (Limoges 1989, Limoges & Robillard 1991b).
Remarks.– Major nesting sites are located on the islands of Poilão, Amegue, Meio, Cavalos, João Vieira, Adonga, Orango and Porcos (Fortes et al. 1998).

***Eretmochelys imbricata* (Linnaeus, 1766)**
Common names.– Hawksbill; P: Tartaruga verdadeira; C: Tartaruga vermelho; B: Djassaka (Orango Isl.).
Distribution.– The species was observed in the entire archipelago (Limoges 1989).
Remarks.– Nesting sites were found on Adonga Island (Limoges 1989), and the species has been observed on the main beaches of Poilao Isl., Unhocom and Porcos Isl.

***Lepidochelys olivacea* (Eschscholtz, 1829)**
Common names.– Olive Ridley Turtle; P: Tartaruga de ridley; B: Emvara (Orango Isl.).
Distribution.– The species was observed throughout the entire archipelago (Limoges & Robillard 1991b).
Remarks.– Major nesting sites are located on Orango Isl., lesser nesting activity occurs on Adonga and Poilão Island (Limoges & Robillard 1991b).

Dermochelyidae

***Dermochelys coriacea* (Vandelli, 1761)**
Common names.– Leatherback Turtle; P: Tartaruga de couro; C: Tartaruga gigante; B: Djunuméme.
Distribution.– The species occurs throughout the archipelago (Limoges & Robillard 1991b).
Remarks.– Egg deposition was observed on the islands of Orango, João Vieira and Unhocomo (Limoges & Robillard 1991b).

Pelomedusidae

***Pelusios castaneus* (Schweigger, 1812)**
Common names.– East African Black Mud Turtle; P: Tartaruga aquática, Cagado preto; C: Tartaruga de agua doce; B: Epototo (Bubaque, Canhabaque), Nun-é (Galinhas, Formosa, Caravela), Iun-é (Orango).
Specimens examined.– Seven, ZFMK 60762–63, plus five uncatalogued live specimens (vouchers lost): Bubaque Isl., Orango Isl., 21.VI.1994, 11./13.VII.1994, 6.VIII.1994.
Distribution.– Monard (1940b) recorded the species first from the mainland. Limoges (1989) and Limoges & Robillard (1991b) first report *P. castaneus* (as *P. subniger*) from the islands Enu and João Vieira Isl. and larger islands.
Remarks.– Specimens were collected in secondary forests with temporary water bodies "lagunas"'. One specimen was found inside a watering tank. During the wet season (mid July to August), adult specimens could be observed in larger, permanent ponds. Next to the water line more individuals were found hidden beneath the grass. Hatchlings and juveniles were examined and released on 6.VIII.1994 (Fig. 12). Carcasses of *P. castaneus* were found near water bodies. Commonly observed Palm-nut Vultures (*Gyphohierax angolensis*) may represent one potential predator.

SAURIA

Amphisbaenidae

***Cynisca feae* (Boulenger, 1906)**
Distribution.– The species was recorded from Bubaque Isl. (Gans 1987). On the mainland recorded from Rio Cacine, Bissau, Ponta de Marques, Bissalanca (Boulenger 1905, Manaças 1955).

Gekkonidae

***Hemidactylus angulatus* Hallowell, 1854**
Common names.– West African House Gecko; P: Osga de brook; C: Oziga.
Specimens examined.– Twelve, ZFMK 58299–300: juveniles, Bubaque Isl., 17.VII.– 9.VIII.1994. ZFMK 58301: Eticoga (Orango Isl.), 18.VI.1994. ZFMK 58302: Soga Isl., 10.VII.1994.
Distribution.– Bocage (1896a) reported this gecko first from Bissau and Bolama Isl. A collection made by L. Fea published by Boulenger (1905) again included material from Bolama Isl., Ferreira (1902) mentions Geba, Monard (1940b) from Ponte Robalo, Mansoa, Sama, Pitche, Madina Boé and Catio and Manaças (1951b) additionally from Ponta de Marques, Bissalanca and Cacine. This study records the species from the Bijagós islands, Orango, Bubaque, and Soga for the first time.
Remarks.– All specimens were collected on house walls and juveniles were commonly observed isolated from adults (Fig. 13). Under captive conditions on Bubaque Isl. cannibalism was observed.

***Lygodactylus gutturalis* (Bocage, 1873)**
Common names.– West African Dwarf Gecko; P: Oziga; C: Lagarticha; B: Dongat.
Specimens examined.– Six, ZFMK 58293–94: Eticoga

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(Orango Isl.), 18.VI.1994. ZFMK 58295–96: Imbone Isl., 8.VIII.1994. ZFMK 58297: Soga Isl., 19.VII.1994. ZFMK 58298: Bubaque Isl., 16.VI.1994.
Distribution.– Loveridge (1947) recorded the species first from Bolama Isl. and therefore the series reported here presents the second record from the archipelago. *L. gutturalis* was described from the mainland (Nogueira) and was later also recorded from Contubo-el, Madina Boé and Pitche (Monard 1940b).
Remarks.– Specimens were found in a variety of arboreal habitats e.g., *Acacia, Anacardium* and *Elaiës* as well as in *Ficus* spp. in gardens, but also in human settlements on roofs and fences. Specimens can be individually identified by their throat patterns (Fig. 14). The species was usually observed active from afternoon to sunset, occasionally also at noon. The Grey-headed Kingfisher (*Halcyon leucocephala*) preyed on this gecko. Other potential predators among the kingfishers include *Halycon senegalensis* and *Alcedo cristata.* In addition, a captive held *Chamaeleo gracilis* on Bubaque Isl. was observed preying on *L. gutturalis.*

Agamidae
***Agama picticauda* Peters, 1877**
Common names.– West African agama; C: Lagarticha.
Specimens examined.– Two, ZFMK 58314–15: Bubaque Isl., 20.VII.1994.
Distribution.– Bocage (1896a) first recorded this species from Guinea-Bissau. Later, Manaças (1950) recorded *A. agama* from Formosa Isl., whereas Naurois (1969) found the species on Bubaque Isl. During his study, *A. agama* was recorded from the islands Uno, Bubaque and Soga.
Remarks.– We follow the taxonomic concept for *Agama agama* published by Wagner et al (2009) who restricted *A. agama* to Central Africa. Therefore the western populations bear the nomen *Agama picticauda*. This species was more abundant in coastal areas, in ruines, but also on *Ficus* or *Mangifera* trees (Fig. 15). On one occasion the species was observed in a *Avicennia* tree, which at high tide was at the waterline. The species was never recorded in treeless areas. Gravid and egg-laying females were observed at the end of July.

Chamaeleonidae
***Chamaeleo gracilis gracilis* Hallowell, 1842**
Common names.– Graceful Chameleon; P: Camaleäo; B: Nhanguti (Balanta).
Specimens examined.– Two, ZFMK 58312–13: females, Eticoga (Orango Isl.), 17./21.VI.1994.
Distribution.– The species was first recorded from Guinea-Bissau by Bocage (1896a). Boulenger (1905) recorded the species from Bolama Isl., the first record from the island group. Limoges & Robillard (1991b) only mentioned *C. senegalensis* from the archipelago, however; presumably both species are represented in their collection. During this study this species was recorded from Orango Isl.
Remarks.– Specimens were only recorded in savannah-like habitats with single trees providing shelter. One specimen was collected on the beach, 3 m from coastal shrubs (Fig. 16). On 24.VI.1994 copulation was observed in captivity on Bubaque Isl.

***Chamaeleo senegalensis* Daudin, 1802**
Common names.– Senegal Chameleon; P: Camaleäo do Senegal; C: Camaleäo.
Distribution.– On the mainland this chameleon was recorded from Rio Cacine (Boulenger 1905), Ponte Robalo, Mansoa, Contubo-el, Pitché, Catio, Cacheu (Monard 1940b); Bijimita, Bissoram, Mansoa (Manaças 1951b); there is one record from Caravela Island (Limoges & Robillard 1991b).
Remarks.– The species is considered to be rare, however it also occurs on other islands (Limoges & Robillard 1991b).

Scincidae
***Trachylepis affinis* (Gray, 1838)**
Common names.– Senegal Mabuya; C: Lagarticha; B: Dongat.
Specimens examined.– Three, ZFMK 58305–06: Bubaque Isl., 25./29.VI.1994. ZFMK 58307: Eticoga (Orango Isl.), 18.VI.1994.
Distribution.– Bocage (1896a) recorded this species first from Guinea-Bissau, Boulenger (1905) recorded it from Bolama Isl. and Naurois (1969) from Bubaque Isl.
Remarks.– The species was observed in shaded and densely vegetated habitats with shrubs and mango trees. *T. affinis* was also observed foraging in the litoral zone (Fig. 17).

***Trachylepis perrotetii* (Duméril & Bibron, 1839)**
Common names.– Teita Mabuya; C: Lagarticha; B: Dongat.
Specimens examined.– Two, ZFMK 58303: Soga Isl., 14.VII.1994. ZFMK 58304: Bubaque Isl., 8.VII.1994.
Distribution.– Initially, Bocage (1872) recorded this scincid from Guinea-Bissau and the same author (Bocage 1896a) provided the Bolama record. In this study *T. perrotetii* was first recorded from the islands Bubaque and Soga.
Remarks.– The species utilizes exposed structures e.g., termite mounds or logs in various forested habitats such as remnants of virgin humid and drier forests, forest edge habitats, secondary forests aswell as gardens and vegetated roadsides.

Varanidae
***Varanus exanthematicus* (Bosc, 1792)**
Common names.– Savannah Monitor; P: Linguana de mato; C: Cutô; B: Cagueda (Bubaque, Canhabaque, Formo-

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sa, Orango), Cagada (Caravela), Caguedje (Galinhas).
Distribution.– On the mainland this monitor lizard was recorded from Bissau and nearby Bolama Isl. (Bocage 1896a; Boulenger 1905), on Buba (Ferreira 1902) and Bissalanca, Canchungo, Pecixe and Pitche (Manaças 1955). The species occurs on several islands of the archipelago (Limoges & Robillard 1991b). Although the authors do not mention specific islands, several local island names of this species are available (see above).
Remarks.– This species is less common than *V. niloticus* (Limoges & Robillard 1991b).

***Varanus niloticus* (Linnaeus, 1758)**
Common names.– Nile Monitor; P: Linguana de agua; C: Linguana; B: Cagueda, Caguedje, Cagada.
Specimens examined.– Five, ZFMK 58308–09: Eticoga (Orango Isl.), 12.VI.1994; ZFMK 58310: Soga Isl., 14.VII.1994. One uncatalogued live specimen, Bubaque Isl., 2.VIII.1994; 1 uncatalogued live specimen Bissau, 10.VIII. 1994.
Distribution.– *V. niloticus* was first recorded from Guinea-Bissau by Bocage (1896a). Manaças (1955) noted the species from Formosa Isl., the first record from the archipelago. Naurois (1969) reported *V. niloticus* from Bubaque Isl. Limoges (1989) also mentioned Varela Isl. and Limoges & Robillard (1991b) indicated that the species inhabits the entire archipelago including smaller islands.
Remarks.– The species was only found in coastal areas. Adult specimens were observed in densely vegetated steeper slopes near the coast. Juveniles were observed next to a freshwater pond (Fig. 18). In 1993, one juvenile was observed in a saltwater pond. Locals consume both, the eggs and the animals.

SERPENTES

Colubridae

***Philothamnus heterodermus* (Hallowell, 1857)**
Common name.– Variable Green Snake
Specimens examined.– One, ZFMK 58332: Orango Isl., 13.VI.1994
Distribution.– Monard (1940b) reported the species first from Guinea-Bissau. This voucher is the first record from the archipelago and represents the westernmost range of the species.
Remarks.– The specimen was found dead next to a path in a dense stretch of coastal forest.

***Thelothornis kirtlandii* (Hallowell, 1844)**
Common name.– Forest Vine Snake.
Specimens examined.– One, ZFMK 60764: Bubaque Isl., 27.VII.1994.
Distribution.– This voucher documents the first record of the species from the archipelago (cf. Riquier & Böhme 1996) (Fig. 19); Loveridge (1944) indicated only "Portuguese Guinea". .
Remarks.– The specimen was detected at a height of 3–4 m in a *Mangifera* tree surrounded by secondary forest. An alerted sunbird (*Cinnyris* cf. *cupreus*) indicated the presence of the snake, which was approaching the sunbird's nest.

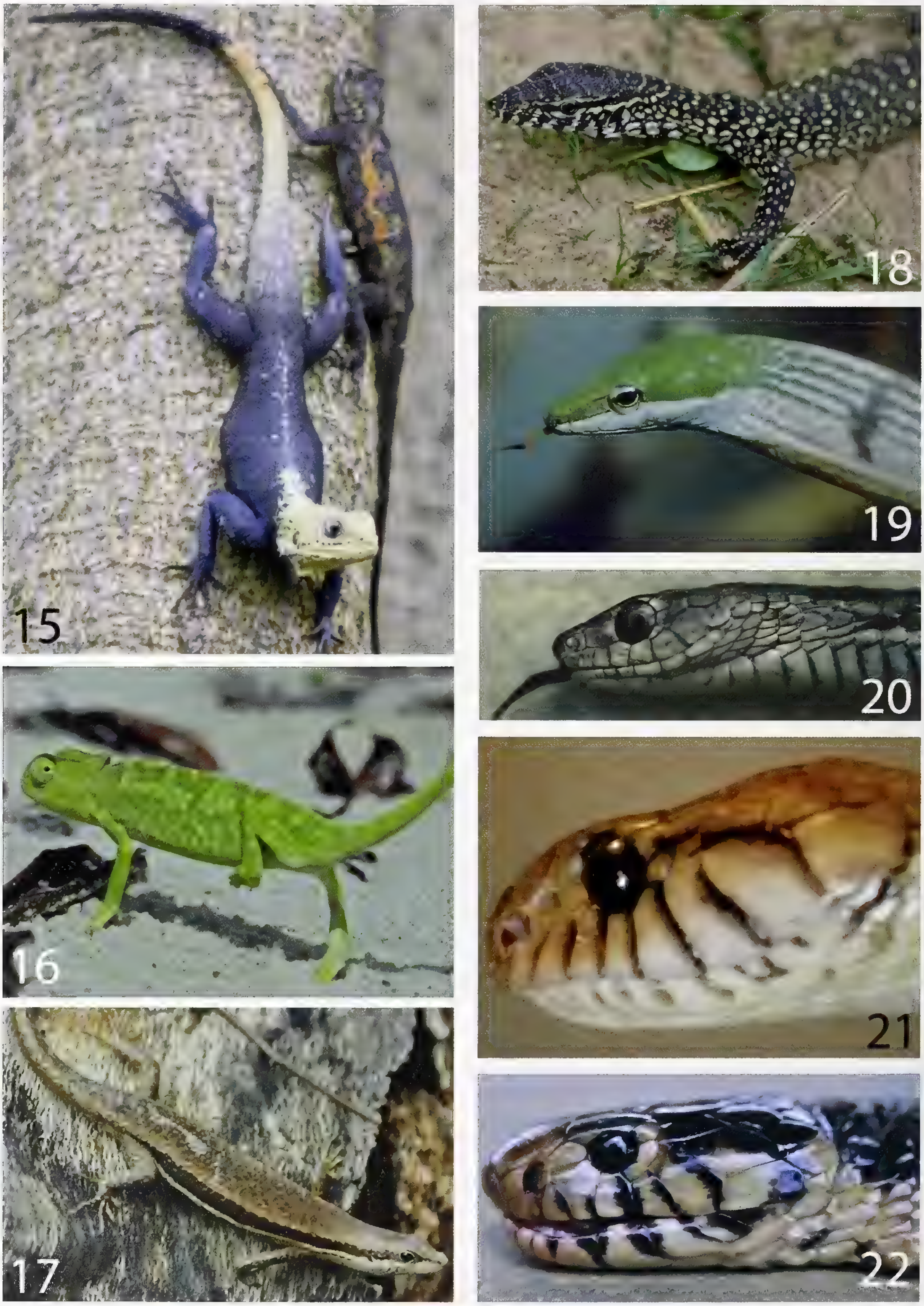
***Thrasops occidentalis* Parker, 1940**
Common name.– Western Black Tree Snake
Specimens examined.– One, ZFMK 58331: Bubaque Isl., 12.VIII.1994.
Distribution.– This record is the first from the archipelago and Guinea-Bissau and presents the northwesternmost locality within the species range (Fig. 20).
Remarks.– The voucher was killed by locals in a traditional village with mud huts interspersed with shrubs. The first third of specimen shows light brown lateral bands on both sides, and the anal scale is entire.

***Toxicodryas blandingii* (Hallowell, 1844)**
Common names.– Blanding's Tree Snake
Specimens examined.– One, ZFMK 61093: Bubaque Isl., 4.VIII.1994.
Distribution.– This snake has been documented from Bolama Isl. (Bocage 1896a, b) and Bissau (Manaças 1955). The Bubaque Isl. voucher specimen represents the first record from the archipelago (Fig. 21). In addition, one specimen was observed on Soga Isl.
Remarks.– The voucher specimen was found during a night survey on the roadside amid dense shrubs of secondary bush and palm vegetation. The specimen from Soga Isl. was observed in an oil palm at a height of approximately 8 m. The taxonomic status of the species remains unresolved; the species is also treated in the genus *Boiga* (e.g. Pauwels & Vande weghe 2008).

Elapidae

***Dendroaspis viridis* (Hallowell, 1844)**
Common names.– Western Green Mamba; P: Cobra verde de palmeira; C: Cacôba; B: Ianne (Orango Isl.), Edjanro (Caravela Isl.).
Distribution.– Naurois (1969) recorded this species from Bubaque Isl., Manaças (1981) further mentions Bolama Isl., whereas Limoges & Robillard (1991b) indicate that the species occurred on all larger islands.
Remarks.– According to Limoges & Robillard (1991b) the species is particularly associated with raffia palms (*Raphia exica*) commonly dominant in swamp forests.

***Elapsoidea semiannulata moebiusi* (Werner, 1897)**
Common names.– Angolan Garter Snake
Distribution.– On the islands this species has only been reported from Bubaque Isl. (Naurois 1969). Manaças (1981) provided a second record from Bubaque Isl.



Figs 15–22. 15. *Agama picticauda*, left male, right female; **16.** *Chamaeleo gracilis*, Orango Isl.; **17.** *Trachylepis affinis*, Bubaque Isl.; **18.** juv. *Varanus niloticus*, Bubaque Isl.; **19.** *Thelotornis kirtlandii*, Bubaque Isl.; **20.** *Thrasops occidentalis*, Bubaque Isl.; **21.** *Toxicodryas blandingii*, Bubaque Isl.; **22.** *Naja melanoleuca*, Bubaque Isl.

Loveridge (1944) indicates mainland locations in Bissau and Rio Cacine.
Remarks.– Voucher specimens are deposited in the collections of the Muséum nationale d'Histoire Naturelle de Paris (MNHN 1965–463). Loveridge (1944) lists the species as *Elapsoidea sundevalli güntherii*.

***Naja melanoleuca* Hallowell, 1857**
Common names.– Forest Cobra; C: Bida; B: Cadjipón.
Specimens examined.– One, ZFMK 58329: Bubaque Isl., 1.VII.1994.
Distribution.– The first record from Guinea-Bissau was provided by Monard (1940b), and this voucher is the first record from the archipelago (Fig. 22). A second specimen was observed on Orango Isl.
Remarks.– The voucher specimen was found at midday in a depression surrounded by slopes with dense vegetation. A second specimen was observed in a palm forest with dense scrub.

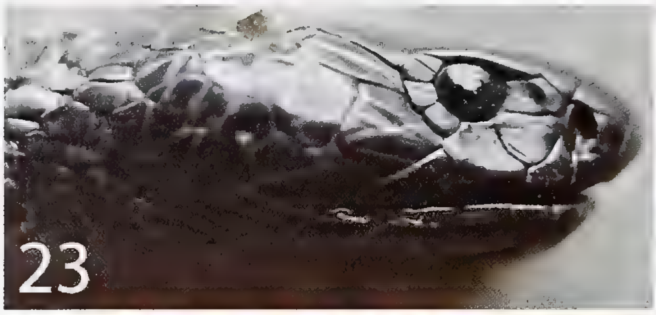
***Naja nigricollis nigricollis* Reinhardt, 1843**
Common names.– Black-necked Spitting Cobra; P: Cuspideira; C: Vida; B: Cadjipón
Specimens examined.– One, ZFMK 58330: Bubaque Isl., 2.VIII.1994.
Distribution.– Bocage (1896a) documented the first record from Bolama Isl., and Manaças (1981) added Bissau and Buba. Limoges & Robillard (1991b) first record the species far off the mainland on the archipelago.
Remarks.– The voucher was killed around midday by locals in secondary bushland on a densely vegetated slope near the coast (Fig. 23).

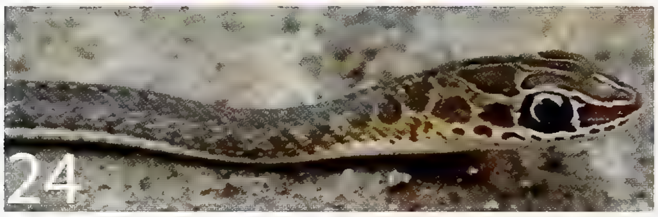
Lamprophiidae
***Boaedon fuliginosus* (Boie, 1827)**
Common name.– Brown House Snake
Distribution.– Boulenger (1905) reports the species on the mainland from Cacine, Manaças (1955) from Bissau, Bissalanca and Bijimita. The only record from the archipelago is provided by Naurois (1969) who reports the species was collected 1962 from Bubaque Isl.
Remarks.– Hallermann & Schmitz (2007) indicated that the "*Lamprophis fuliginosus*" complex includes several cryptic species. Most recent taxonomic research suggests the resurrection of the generic name *Boaedon* Duméril, Bibron & Duméril, 1854 for the widely distributed *fuliginosus* complex (Kelly et al. 2011), a view which is followed herein.

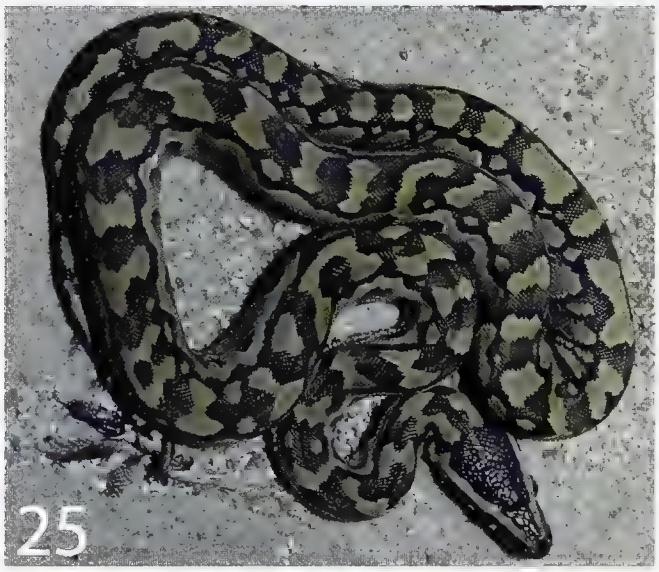
***Psammophis phillipsi* (Hallowell, 1844)**
Common names.– Phillip's Sand Snake; P: Cobra amonton.
Specimens examined.– Five, ZFMK 58316–17: Bubaque Isl., 26./27. VI. 1994. ZFMK 58318: Bubaque Isl. 20.VII. 1994. ZFMK 58319: Bubaque Isl., 15.VII. 1994. ZFMK 58320: Bubaque Isl., 2. VIII. 1994.
Distribution.– Naurois (1969) reported the species from Uno Island. This study recorded the species based on vouchers from Bubaque Isl. (Fig. 24) and one specimen was observed on Soga Isl.
Remarks.– The species was recorded during daytime in secondary bushland interspersed with *E. guineensis*, in agroecosystems and home gardens. Two specimens were observed preying on a female *Agama picticauda* and *Trachylepis affinis*. Both species have been found to represent the most common prey items of *P. phillipsi* (Akani et al. 2003).

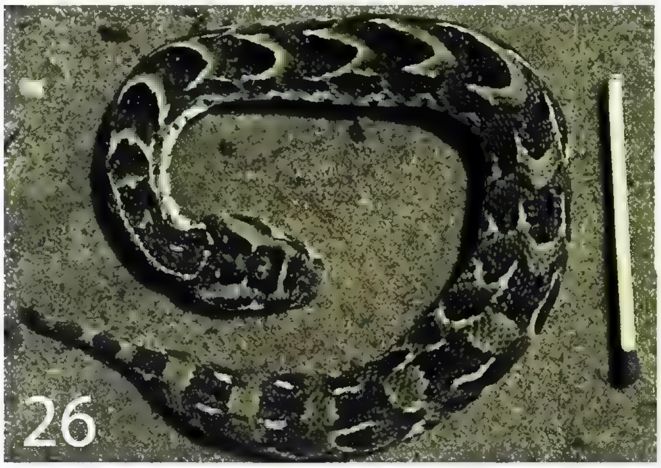
Pythonidae
***Python sebae* (Gmelin, 1789)**
Common names.– Northern African Python; P: Gibóia; C: Irä Cego; B: Emeno, Emeni (Orango Isl.).
Specimens examined.– Four, ZFMK 58333: Soga Isl., 14.VII.1994. Three uncatalogued live specimens, Bubaque Isl., 13./14./23.VII.1994 (Fig 25).
Distribution.– Bocage (1896a) was the first to record *P. sebae* from Guinea-Bissau while Naurois (1969) first reported the species from the archipelago, without providing any specific locality. Limoges & Robillard (1991b) indicated that this species ranges on all larger and some smaller islands. In this study the species is documented by vouchers from Soga Isl. and Bubaque Isl., one skin owned by locals on Orango Isl. was observed and a skeleton including a jawbone was found on Imbone Island.
Remarks.– Limoges & Robillard (1991b) recorded the snake from agroecosystems, salt marshes and mangrove swamps, usually near water bodies. Voucher specimens were collected in secondary bushland, rice fields and near mangrove swamps. Limoges & Robillard (1991b) reported *P. sebae* as a predator of bird colonies, also on very small islands. This may prove that the species is capable of crossing greater marine passages between the islands. According to locals, domestic fowl and livestock also represent prey items of *P. sebae*. In one event, a python devoured a sleeping child in a hut (IUCN staff, pers. comm.). *P. sebae* is always killed by locals if it enters a village. The meat is consumed, and it is believed that it heals leprosy. Skins are sold in local markets.

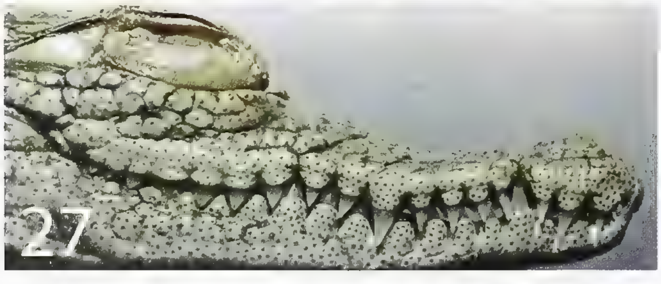
Viperidae
***Bitis arietans arietans* Merrem, 1820**
Common names.– Puff Adder; P: Surucucu; C: Tutu; B: Evé-vé.
Specimens examined.– Two, ZFMK 58327: Soga Isl., 15.VII.1994. ZFMK 58328: Bubaque Isl., 17.VII.1994.
Distribution.– Bocage (1896a) documented the species first from Bolama Island. Limoges & Robillard (1991b) reported the species from the archipelago, but did not pro-

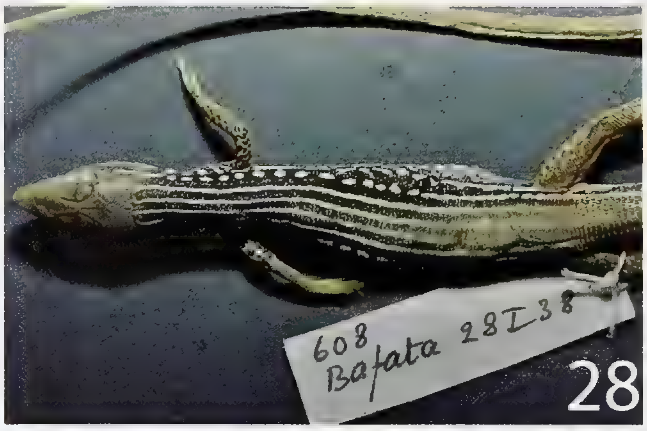


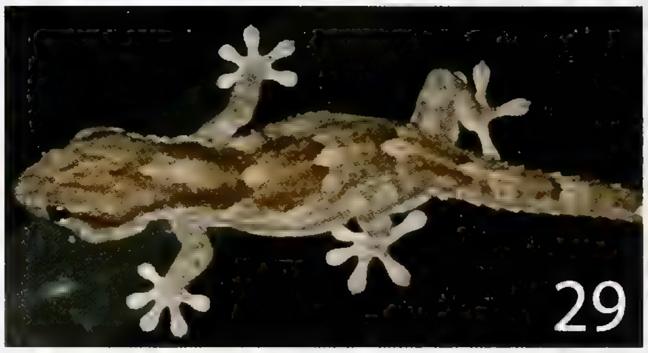


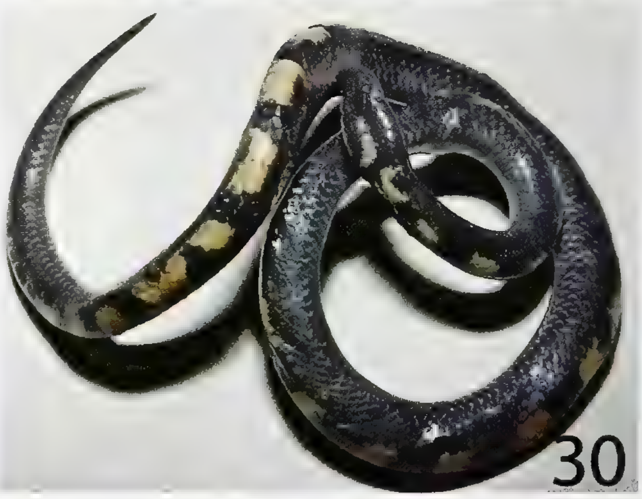


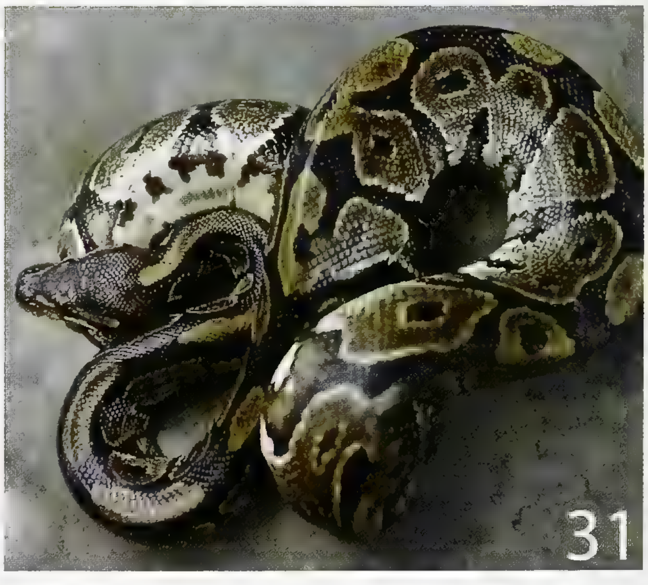












Figs 23–31. **23.** *Naja n. nigricollis*, Bubaque Isl.; **24.** *Psammophis phillipsi*, Bubaque Isl.; **25.** *Python sebae*, Bubaque Isl.; **26.** *Bitis a. arietans*, Soga Isl. ; **27.** juv. *Crocodylus suchus*, Bissau Zoo; **28.** *Latastia ornata*, Bafatà, mainland ; **29.** *Tarentola ephippiata senegambiae*, Mansoa, mainland; **30.** *Lycophidion albomaculatum,* Bissau; **31.** *Python regius*, Bissau.

Table 2. Colour morphs of six live *Hyperolius occidentalis*.

Specimens	**No. 1**	**No. 2**	**No.3**	**No.4**	**No.5**	**No.6**
Locality		Orango	Bubaque	Bubaque	Bubaque	Bubaque
Sex	Female?	Female?	Male	Male	Male	Male?
SVL (mm)	33	30–32	28–29	30	28–29	25
Throat	Yellow	Yellow	Intense yellow	Yellow	Dark yellow	–
Belly	Yellow small yellow	White with with white mark mark	Light yellow in the centre	Yellow	Yellow	Yellow
Fore limbs	Interior light yellow	–	–	Only pigmented above, interior yellow	Joints without pigmentation	–
Fingers	1 and 2 yellow	–	1 and 2 yellow less pigmented,	1 and 2 light yellow	– including	1 and 2 yellow the web
Discs / fingers	–	–	–	–	1 not pigmented, yellow, 2 slightly pigmented dark yellow, 3 and 4 pigmented	–
Hind limbs (concerning orange/red parts)	Backside of thighs	Underside of thighs also with scarce yellowish pigmentation	Inside and outside of thighs, underside of tarsus	Posterior, interior and underside of thigs. femur, tibia, and tarsus yellow inside, towards anus yellowish mottled	Upper side of thigh framed with red spot and dark pigmented, outside of thigh with 3x larger red mark compared to upper side	Upper side of thigh slightly pigmented, underside of tarsus (1, 2, and 3 toe), underside of thighs with larger yellowish mottling
Toes	1, 2 and 3 are red including the corresponding webbing	–	–	1, 2 and 3 less pigmented, little reddish and whitish	in front of 3 toe red mark	1, 2 and 3 including the webbing red, 4 and 5 pigmented
Discs / toes	red, 4 and 5 more pigmented, dark red	–	4 reddish	–	all dark, 1, 2, and 3 lighter red	all red
Dorsal-lateral line/stripe	–	–	–	Distinctly pronounced	Distinctly pronounced	Scarcely pronounced

vide explicit locality records. Garcia (1991) provided a first record from Bubaque Island. In this study, *B. arietans* was recorded from the islands Soga and Bubaque.

Remarks.– Specimens from both islands Orango and Bubaque were detected in savannah-like habitats periodically altered through slash-and-burn farming practises. On Soga Isl. a dead juvenile specimen was found in dense secondary bush and palm forest (Fig. 26).

Bitis nasicornis **(Shaw, 1802)**

Common names.– Rhinoceros Viper; P: Vibora cornuda

Distribution.– Apparently only known from Bubaque Isl., where a juvenile and adult have been recorded (Naurois 1969)

Remarks.– Manaças (1981) indicates that Schmidt (1933) provides a quote by Boulenger, who states that the species occurs in Guinea-Bissau. This viper occurs in diverse

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ecosystems from lowland savannah to high altitude forested ecosystems (Angel et al. 1954).

Crocodylidae

Crocodylus suchus Geoffroy, 1807

Specimens examined.– One, ZFMK 58334: dead juv., Bissau Zoo (Fig 27).
Distribution.– A first record from Bolama Isl. is provided by Bocage (1896b). Populations are recorded from the islands Orango, Formosa, Imbone and Uno (Limoges & Robillard 1991a, b).
Remarks.– Limoges & Robillard (1991b) reported an increase of populations from the islands mentioned above. West and central African populations proved to have high genetic divergence from eastern populations of the Nile Crocodile (Schmitz et al. 2003).

Osteolaemus tetraspis tetraspis Cope, 1861

Common names.– Dwarf Crocodile; P: Crocodilo anäo; C: Lagarto preto; B: Eneguebe (Bubaque, Canhabaque), Etchega (Galinhas, Formosa), Eod (Orango), Equetch (Caravela).
Distribution.– Bocage (1867) reports one specimen from Bissau. Waitkuwait (1985) could not provide any locality records from Guinea-Bissau, however, according to Méthot (1989, in litt. Limoges 1989) remnant populations probably occur on the islands Formosa and Orango.
Remarks.– Similarly as in *C. suchus* Limoges & Robillard (1991b) reported an increase of populations from Orango Island.

DISCUSSION

Available reports on amphibians or reptiles recorded in Guinea-Bissau are scarce. Preliminary studies go back to Bocage (1866, 1867, 1872, 1873, 1888, 1896a, b), Monard (1940a, b) and Manaças (1947, 1949, 1950, 1951a). Other reports provide more general data of the entire vertebrate fauna as well as essays on the herpetofauna (e.g., Frade 1950; Naurois 1969; Limoges 1989; Limoges & Robillard 1991a, b). Latest herpetological published records mainly refer to sea turtles, in particular to *Chelonia mydas* (Catry et al. 2002; Fortes et al. 1998; Godley et al. 2003).

The present study demonstrates that at least 13 amphibian species occur on four of the main Bijagós islands, ten of these represent first records for the country. Therefore, a total of 25 amphibian species are now known from Guinea-Bissau (App. 1). Five marine turtle species and 26 reptile species (including two crocodilians) occur on the archipelago. Alike amphibians, reptile diversity is clearly lower on the islands compared to the mainland (App. 1). However, the present study has clear limits and most likely covers only parts of the herpetofauna of the islands.

The phenomen of lower species richness on the islands was also recognized by other authors (e.g., Mertens 1964) and may relate to the islands distinctly smaller land surfaces, isolation from the mainland, lacking elevated ecosystems and freshwater wetlands or it is correlated with forest cover, habitat diversity and rainfall (Leaché et al. 2006, Rödel et al. 2008). The differences in species richness are more distinct in amphibians, and naturally dispersed colonization is more restricted although possible via rafting and potentially with birds (egg clusters stick to feathers) (cf. Measey et al. 2007; Queiroz 2005), and with few species i.e. *Ptychadena mascareniensis* indicating a certain tolerance to salinity (Vences et al. 2004). However, the translocation of amphibians through humans appears to be the most common mechanism of dispersal for species roaming oceanic islands (Vences et al. 2003).

The vegetation of the Bijagós archipelago comprises both, Guinean/Congolian and Sudano-Sahel elements, which is reflected in its herpetofauna. Typical savannah species (e.g., *Hemisus guineensis, Trachylepis perroteti* and *Bitis arietans*) are recorded from the islands as well as typical rainforest dwellers (*Silurana tropicalis, Bitis nasicornis* and *Thelotornis kirtlandii*). In some species, e.g., *Kassina senegalensis* and *Thrasops occidentalis* differences in morphology between island and mainland populations have been recognized and further research is necessary to clarify the taxonomic status of these island populations. Also, the *Hyperolius* sp. may represent an endemic species. This is important as the islands are impacted by various threats, in particular by illegal logging for commercial timber and slash-and-burn shifting agriculture and therefore many species could be threatened before they become known to science.

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Appendix 1

Checklist of the herpetofauna of Guinea-Bissau.

AMPHIBIA

Artholeptidae

***Arthroleptis poecilonotus* Peters, 1863**
Localities.– Guinea-Bissau.
References.– Manaças (1949, 1950).
Remarks.– The species is recognized as a member of a species complex (Rödel & Bangoura 2004); the taxonomic status of *A. poecilonotus* in Guinea-Bissau requires verification.

***Leptopelis bufonides* (Günther, 1868)**
Localities.– Orango Isl., Bubaque Isl.
References.– Present study.

***Leptopelis viridis* (Boulenger, 1906)**
Localities.– Bolama Isl., Orango Isl., Bubaque Isl.
References.– Bocage (1896a), Boulenger (1905), Manaças (1949), present study.
Remarks.– Manaças (1949, 1950) published a record from Bolama Isl. as *Leptopelis bocagei* (Günther, 1865), but the occurrence of this species in western Africa is questionable as the westernmost confirmed record is from Central Africa (eastern Cameroon) (Rödel 2000). Therefore we suggest that this specimen might refer to *L. viridis*.

Bufonidae

***Amietophrynus maculatus* (Hallowell, 1854)**
Localities.– Orango Isl.
References.– Present study.

***Amietophrynus regularis* (Reuss, 1833)**
Localities.– Bissau, Ponta do Marques Mano, Bissalanca, Tor, Bissoram; Enxalé, Contubo-el, Catió, Cacheu, Bolama Isl., Pecixe, Mansoa, Cacine, Pitche, Orango Isl.
References.– Monard (1940a), Manaças (1949, 1950), Naurois (1969).

Hemisotidae

***Hemisus guineensis* Cope, 1865**
Localities.– Bolama Isl., Bubaque Isl., Orango Isl.
References.– Boulenger (1905), Manaças (1949, 1950), present study.

Hyperoliidae

***Hyperolius concolor* (Hallowell, 1844)**
Localities.– Ponta de Marques Mano, Cutia, Pitche, Bolama Isl., Ponta Robalo, Bissalanca, Bissau, Sansanto (Mansoa).
References.– Boulenger (1905), Manaças (1949, 1950), Monard (1940a), Naurois (1969). *Remarks*.– *Hyperolius guineensis* Ahl, 1931 is considered as a synonym of *H. concolor* and was listed next to *H. concolor* by Monard (1940a), Manaças (1949, 1950), Naurois (1969).

***Hyperolius nitidulus* Peters, 1875**
Localities.– Bubaque Isl.
References.– Present study.

***Hyperolius occidentalis* Schiøtz, 1967**
Localities.– Bubaque Isl.
References.– Present study.

***Hyperolius spatzi* Ahl, 1931**
Localities.– Bubaque Isl.
References.– Present study.

***Kassina senegalensis* (Duméril & Bibron, 1841)**
Localities.– Bubaque Isl.
References.– Present study.

Ranidae

***Hoplobatrachus occipitalis* (Günther, 1858)**
Localities.– Ponta de Marques Mano, Bissalanca, Tor, Prabis, S. Domingos, Gabu, Bafatá, Canchungo, Calequisse, Pecixe, Bissoram, Mansoa, Catió, Bolama Isl., Antula, Bambadinca, Sambel n'antá, Farim, Buba,
References.– Ferreira (1902), Boulenger (1905), Monard (1940a), Manaças (1949, 1950).

***Hylarana galamensis* (Duméril & Bibron, 1841)**
Localities.– Bissau, Catió, Cacheu
References.– Monard (1940a), Manaças (1949, 1950).

Pipidae

***Pseudhymenochirus merlini* Chabanaud, 1920**
Localities.– Pitche (Gabu), Contubo-el
References.– Monard (1940a), Manaças (1947, 1950, 1951a)

***Silurana tropicalis* (Gray, 1864)**
Localities.– Ilha de Bissau, Bolama Isl., Calequisse (Canchungo), Bubaque Isl., Imbone Isl.
References.– Manaças (1947, 1950, 1951a), present study

Phrynobatrachidae

***Phrynobatrachus calcaratus* (Peters, 1863)**
Localities.– Bubaque Isl.
References.– Present study.

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Phrynobatrachus francisci **Boulenger, 1912**
Localities.– Orango Isl., Bubaque Isl.
References.– Present study.

Phrynobatrachus minutus **(Boulenger, 1895)**
Localities.– Bolama Isl.
References.– Manaças (1949, 1950).
Remarks.– listed as *Arthroleptis minutus; Phrynobatrachus minutus* is endemic to Ethiopia, congeners of *Arthroleptis* recorded from Guinea-Bissau remain valid species (see below).

Phrynobatrachus natalensis **(Smith, 1849)**
Localities.– Pitche.
References.– Monard (1940a), Manaças (1949, 1950).

Phrynobatrachus tokba **(Chabanaud, 1921)**
Localities.– Dandum (Boé).
References.– Monard (1940a), Manaças (1949, 1950).
Remarks.– Listed as *Arthroleptis "tobka"*.

Ptychadenidae
Ptychadena ansorgii **(Boulenger, 1905)**
Localities.– Cacine.
References.– Manaças (1949, 1950).

Ptychadena bibroni **(Hallowell, 1845)**
Localities.– Ponte de Marques Mano, Bissoram, Mansoa, Madina-Boé, Caïra, Catió, Orango Isl., Bubaque Isl..
References.– Monard (1940a), Manaças (1949, 1950), Naurois (1969), present study.

Ptychadena mascareniensis **(Duméril & Bibron, 1841)**
Localities.– Bissau, Ponta Robalo, Ponta de Marques Mano, Bissoram, Prábis; Catió, Enxalé, Contubo-el, Pitche, Bolama Isl., Gabu, Madina do Boé, Caíra, Cacine, Mansoa, Cutiá.
References.– Bocage (1896a), Boulenger (1905), Manaças (1949, 1950), Monard (1940a), Naurois (1969).

Ptychadena oxyrhynchus **(Smith, 1849)**
Localities.– Bolama Isl.
References.– Manaças (1950).

Ptychadena pumilio **(Boulenger, 1920)**
Localities.– Orango Isl.
References.– Present study.

Reptilia
Testudines
Cheloniidae
Caretta caretta **(Linnaeus, 1758)**
Localities.– Bijagós archipelago.
References.– Limoges (1989), Catry et al. (2009).

Chelonia mydas **Linnaeus, 1758**
Localities.– Bijagós archipelago.
References.– Bocage (1896a), Limoges (1989), Limoges & Robillard (1991b).

Eretmochelys imbricata **(Linnaeus, 1766)**
Localities.– Bijagós archipelago.
References.– Limoges (1989), Limoges & Robillard (1991b).

Lepidochelys olivacea **(Eschscholtz, 1829)**
Localities.– Bijagós archipelago.
References.– Limoges & Robillard (1991b).

Dermochelyidae
Dermochelys coriacea **(Vandelli, 1761)**
Localities.- Bijagós archipelago, mainland
References.- Limoges & Robillard (1991b), Catry et al. (2009)

Pelomedusidae
Pelomedusa subrufa **(Lacepède, 1788)**
Localities.– Cufada, Cufar, Catio, Cacine.
References.– Garcia (1991).

Pelusios castaneus **(Schweigger, 1812)**
Localities.– Bissau, Ponte Robalo, Catió, Cacheu, Catanhez, Enu, João Vieira, Bubaque Isl., Orango Isl.
References.– Bocage (1867), Broadley (1981), Garcia (1991), Monard (1940b), Limoges (1989), Limoges & Robillard (1991b), present study [party mentioned as *Pelusios subniger*].

Testudinidae
Kinixys belliana nogueyi **(Lataste, 1886)**
Localities.– Bolama Isl.
References.– Bocage (1896a), Garcia (1991).

Kinixys homeana **Bell, 1827**
Localities.– Cajadude, Boé.
References.– Limoges (1989), Garcia (1991).

Trionychidae
Cyclanorbis senegalensis **(Duméril & Bibron, 1835)**
Localities.– Cufada.
References.– Present study.

Trionyx triunguis **(Forskål, 1775)**
Localities.– Bissau, Corubal, Cufada
References.– Bocage (1867), Limoges (1989), Garcia (1991).
Remarks.– Listed by Bocage (1867) as *Gymnopus aegyptiacus.*

SAURIA

Amphisbaenidae

***Cynisca feae* (Boulenger, 1906)**
Localities.– Rio Cacine, Ponta de Marques Mano, Bissalanca, Bubaque.
References.– Gans (1987), Manaças (1955).

***Cynisca leonina* (Müller, 1885)**
Localities.– Rio Pongo.
References.– Loveridge (1941), Gans (1987).

***Cynisca oligopholis* (Boulenger, 1906)**
Localities.– Rio Cacine.
References.– Loveridge (1941), Gans (1987).

Agamidae

***Agama boensis* Monard, 1940 | *Agama sankaranica* Chabanaud, 1918**
Localities.– Madina Boé, Pitche.
References.– Manaças (1951b), Grandison (1968), Joger (1979).
Remarks.– According to Grandison (1968), Monard (1940b) described *Agama boensis* on the basis of a series intermingled with adult specimens referring to *A. sankaranica* and juveniles referring to *A. weidholzi.* Later, *A. boensis* is often recognized as subspecies of *Agama agama* (e.g. Wermuth 1967), which is in fact very doubtful. Manaças (1951b) collected three specimens assigned to to *A. boensis* while Wagner (2010) recognized *A. boensis* as valid species. In this context *A. boensis* should be added to the herpetofauna of Guinea-Bissau, but further research is needed to clarify the presence of *A. sankaranica* within the country.

***Agama picticauda* Peters, 1877**
Localities.– Bissau, Ponta Robalo, Ponta de Marques Mano, Tor, Biombo, Samá, Pitche, Enxalé, Bolama Isl., Farim, Mansoa, Contubo-el, Madina do Boé, Gabu, Ilha Formosa, Bambadinca, Pecixe, Canchungo, Bissalanca, Bafatá, Bissorã, Chitole, Rio Cacine, Capé, Bor, Uno, Bubaque, Soga
References.– Bocage (1896a), Ferreira (1902), Boulenger (1905), Monard (1940b), Manaças (1950, 1951b), Frade (1950), Garcia (1991), Naurois (1969), present study
Remarks.– Listed as *Agama colonorum* by Bocage (1896a), Ferreira (1902), Monard (1940b) and Manaças (1951b).

***Agama weidholzi* Wettstein, 1932**
Localities.– Madina do Boé, Pitche.
References.– Joger (1979), Monard (1940b), Grandison (1968).
Remarks.– Monard (1940b) described *A. boensis* (see above) on the basis of a single voucher of *A. weidholzi* therefore this was the first record of the species from Guinea-Bissau.

Chamaeleonidae

***Chamaeleo gracilis* Hallowell, 1842**
Localities.– Bissau, Antula, Ponta de Marques Mano, Brene, Tor, Prábis, Bissalanca, Bissoram, Canchungo, Bissoram, Cacheu, Bilama, Chitole, Rio Cacine, Farim, Canchungo, Mansoa, Catió, Nhampurbane (Gabu), Farim, Rio Cacine, Ponta Robalo, Cantubo-el, Pitche, Cacheu, Bolama Isl., Contabani, Orango Isl.
References.– Bocage (1896a), Ferreira (1902), Boulenger (1905), Manaças (1951b), , Gardete-Correira (1971–73), Garcia (1991), present study.

***Chamaeleo senegalensis* Daudin, 1802**
Localities.– Bissoram, Pitche, Cacheu, Mansoa, Catió, Contubo-el, Bijimita, Rio Cacine, Caravela.
References.– Monard (1940b), Manaças (1951b), Limoges & Robillard (1991b).

Gekkonidae

***Hemidactylus angulatus* Hallowell, 1854**
Localities.– Bissau, Ponta Robalo, Ponta de Marques Mano, Bissalanca, Samá, Pitche, Madina do Boé, Bolama Isl., Geba, Mansoa, Pitche, Chitole, Catió, Cacine, Rio Cacine, Bubaque, Orango, Soga.
References.– Bocage (1896a), Ferreira (1902), Boulenger (1905), Monard (1940b), Manaças (1951b), Garcia (1991), present study.

***Lygodactylus gutturalis* (Bocage, 1873)**
Localities.– Bissau, Geba, Contubo-el, Madina do Boé, Pitche, Bolama Isl., Orango Isl., Imbone Isl., Soga Isl., Bubaque Isl.
References.– Bocage (1873), Garcia (1991), Monard (1940b), Loveridge (1947), present study.

Lacertidae

***Latastia ornata* Monard, 1940**
Localities.– Bafatà (Fig. 28).
References.– Monard (1940b).
Remarks.– Additional records remain outstanding; the only West African congener recorded in coastal wetlands of Mauritania (Ineich 1997) and coastal Senegal (Böhme 1978) is *L. longicaudata* (Reuss, 1839).

Phyllodactylidae

***Tarentola ephippiata senegambiae* Joger, 1984**
Localities.– Ponta de Marques Mano, Tor, Antula, Biombo, Bissalanca, Enxalé, Mansoa, Contubo-el, Bafatá, Pitche, Canchungo, Farim, and Mansoa present study (Fig. 29).
References.– Boulenger (1905), Monard (1940b), Manaças (1951b), Joger (1981, 1984).

Remarks.– Considered as a full species by Trape et al. (2012).

Scincidae

***Chalcides armitagei* Boulenger, 1922**
Localities.– Sucujaque, coastal Guinea-Bissau
References.– Trape (2007)
Remarks.– Previously considered endemic to coastal dunes in The Gambia (Gruschwitz et al. 1991).

***Chalcides pulchellus* Mocquard, 1906**
Localities.– Madina do Boé.
References.– Monard (1940b).
Remarks.– C. pulchellus is restricted to western Guinea, southeastern Senegal and Mali, whereas *C. thierryi* occurs further south extending into northern Ghana and the east of Nigeria (Joger & Lambert 2002, Greenbaum et al. 2006).

***Mochlus guineensis* Peters, 1879**
Localities.– Rio Corubal e Cacine.
References.– Boulenger (1905), Manaças (1951b).

***Panaspis tristaoi* Monard, 1940**
Localities.– Corubal.
References.– Monard (1940b), Naurois (1969).

***Trachylepis affinis* (Gray, 1838)**
Localities.– Bissau, Ponta de Marques Mano, Bissalanca, Bissoram, Geba, Antula, Bolama Isl. Isl., Cacheu, Rio Cassine, Farim, Canchungo, Calequisse, Pecixe, Mansoa, Madina do Boé, Enxalé, Orango Isl., Bubaque Isl.
References.– Bocage (1896a), Ferreira (1902), Boulenger (1905), Monard (1940b), Manaças (1951b), Naurois (1969), Garcia (1991), present study.

***Trachylepis perrotetii* (Duméril & Bibron, 1839)**
Localities.– Bissau, Bolama Isl. Isl., Farim, Cacheu, Mansoa, Madina do Boé, Canchungo, Calequisse, Cacine, Bissoram, Farim, Soga Isl., Bubaque Isl.
References.– Bocage (1896a), Boulenger (1905), Monard (1940b), Manaças (1951b), Gardete-Correira (1971–73), Garcia (1991), present study.

Varanidae

***Varanus exanthematicus* (Bosc, 1792)**
Localities.– Bissau (present study, ZFMK 58311), Buba, Bissalanca, Tor, Brene, Pitche, Pecixe, Canchungo, Bolama Isl., and Bijagós archipelago.
References.– Bocage (1896a), Boulenger (1905), Limoges & Robillard (1991b), Garcia (1991),

***Varanus niloticus* (Linnaeus, 1758)**
Localities.– Bissau, Brene, Bigimita, Formosa, Bambadinca, Ponta Robalo, Bolama Isl., Dungal, Corubal, Varala, Orango Isl., Soga Isl., Bubaque Isl., Caravela Isl., Carache Isl., Uno Isl., Canhabaque, Cä-Balanta.
References.– Bocage (1866), Ferreira (1902), Boulenger (1905), Monard (1940b), Manaças (1951b, 1955), Naurois (1969), Limoges (1989), Limoges & Robillard (1991b), Garcia (1991), present study.

SERPENTES

Colubridae

***Crotaphopeltis hotamboeia* (Laurenti, 1768)**
Localities.– Bissau, Contubo-el, Cacheu, Marques Mano, Bijimita, Bissalanca, Ponta de Machado, Bafatá.
References.– Monard (1940b), Manaças (1955), Chippaux (2006).

***Dasypeltis confusa* Trape & Mané, 2006**
Localities.– Bissau, Bissalanca, Rio Cacine.
References.– Bocage (1867, 1896a), Manaças (1955), Gardete-Correira (1971–73), Naurois (1969), Trape & Mané (2006), Chippaux (2006).
Remarks.– Dasypeltis scaber scaber was recorded from Guinea-Bissau. Scalation data matches with that of *D. confusa* described by Trape & Mané (2006), thus assigning *D. s. scaber* as a synonym of *D. confusa*. Trape & Mane (2006) further record this species from Senegal, Guinea and Benin.

***Dispholidus typus* (Smith, 1829)**
Localities.– Bolama Isl., Cacheu, Rio Cacine.
References.– Bocage (1896b), Manaças (1955).

***Grayia smithii* (Leach, 1818)**
Localities.– Madina Boé, Bissau.
References.– Monard (1940b), Manaças (1955), Gardete-Correira (1971–73), Chippaux (2006).
Remarks.– The sympatric *G. tholloni* was mistaken with a Senegal record of *G. smithii* by Villiers (1950), as was determined by Trape & Mané (2000). However the record here provided by the authors matches with *G. smithii* with respect to scalation data.

***Hapsidophrys smaragdina* (Schlegel, 1837)**
Localities.– Bolama Isl.
References.– Bocage (1896b).

***Natriciteres olivacea* (Peters, 1854)**
Localities.– Guinea-Bissau.
References.– Frade et al. (1946), Naurois (1969).
Remarks.– The species has been recorded in Guinea (Broadley 1966) and Burkina Faso (Trape 2005), in Chippaux (2006), the species' most northern distribution along the West African forest belt is Sierra Leone.

Philothamnus heterodermus (Hallowell, 1857)
Localities.– Catió, Madina do Boé, Orango Isl.
References.– Monard (1940b), present study.

Philothamnus heterolepidotus (Günther, 1863)
Localities.– Ponte Robalo, Caita.
References.– Monard (1940b).
Remarks.– Sierra Leone is the most northwestern distribution of the species (Chippaux 2006).

Philothamnus irregularis (Leach, 1819)
Localities.– Bissau, Cacheu, Bolama Isl., Pimenta, Pitche, Barahona, Ponte Robalo.
References.– Bocage (1896a), Monard (1940b), Gardete-Correira (1971–73).

Philothamnus semivariegatus (Smith, 1847)
Localities.– Bissau.
References.– Gardete-Correira (1971–73).

Thelotornis kirtlandii (Hallowell, 1844)
Localities.– Bubaque Isl., "Portuguese Guinea"
References.– Riquier & Böhme (1996), Loveridge (1944), present study.

Toxycodryas blandingii (Hallowell, 1844)
Localities.– Bissau, Bissalanca, Soga Isl., Bubaque Isl.
References.– Manaças (1955), present study.

Elapidae
Elapsoidea semiannulata moebiusi Werner, 1897
Localities.– Bubaque Isl., Bissau, Rio Cacine
References.– Loveridge (1944), Naurois (1969), Manaças (1981).

Dendroaspis jamesoni (Traill, 1843)
Localities.– Bissau, Bolama Isl.
References.– Bocage (1896a, b, 1888), Naurois (1969), Manaças (1981).

Dendroaspis viridis (Hallowell, 1844)
Localities.– Bolama Isl.. Bubaque Isl.
References.– Naurois (1969), Manaças (1981).

Naja haje (Linnaeus, 1758)
Localities.– Bolama Isl.
References.– Garcia (1991).

Naja melanoleuca Hallowell, 1857
Localities.– Contubo-el, Bolama Isl., Farim, Bubaque Isl.
References.– Monard (1940b), Manaças (1981), present study.

Naja nigricollis Reinhardt, 1843
Localities.– Bolama Isl., Bambadinca, Aldeia de Cuor, Bissau, Buba, Bijagós archipelago, Bubaque Isl.
References.– Bocage (1896a), Frade et al. (1946), Manaças (1981), Limoges & Robillard (1991b), present study.

Lamprophiidae
Atractaspis aterrima Günther, 1863
Localities.– Bolama Isl.
References.– Manaças (1981), Chippaux (2006).

Amblyodipsas unicolor (Reinhardt, 1843)
Localities.– Rio Cacine.
References.– Villiers (1963), Broadley (1971), Chippaux (2006).

Boaedon fuliginosus (Boie, 1827)
Localities.– Bubaque Isl., Rio Cacine, Bissalanca, Bigimita.
References.– Boulenger (1905), Naurois (1969), Manaças (1955), Gardete-Correira (1971–73).

Boaedon lineatus (Duméril, Bibron & Duméril, 1854)
Localities.– Cacheu, Bissau, Madina Boé, Rio Cacine, Bolama Isl. Isl., Ponta de Machado.
References.– Bocage (1896a), Boulenger (1905), Monard (1940b), Manaças (1955).

Gonionotophis grantii (Günther, 1863)
Localities.– Guinea-Bissau.
References.– Loveridge (1939), Villiers (1963, 1975), Chippaux (2006).

Gonionotophis poensis (Smith, 1847)
Localities.– Bissau.
References.– Bocage (1873).
Remarks.– Based on current taxonomic revisions all *Mehelya* spp. are included in the genus *Gonionotophis* (Kelly et al. 2011). Bocage received one specimen (*Simocephalus poensis*) from M. Ferreira Borges, and emphasizes its similarity with *Gonionotophis grantii;* however G. *poensis'* most northwestern distribution is southeastern Guinea (Chippaux 2006), thus Bocage's provisional identification may confirm *G. poensis* with a distinct range extension.

Gonionotophis stenophthalmus (Mocquard, 1887)
Localities.– Bissau.
References.– Bocage (1896a), Chippaux (2006).

Lycophidion albomaculatum Steindachner, 1870
Localities.– Bissau, Bolama Isl.
References.– Bocage (1896a), Boulenger (1905), Ferreira (1902), Manaças (1955), Villiers (1975), present study (Fig. 30).
Remarks.– Aforementioned authors assigned the species to *L. semicinctum*.

***Lycophidion irroratum* (Leach, 1819)**
Localities.– Rio Cacine, Bissau, Ponta de Machado.
References.– Boulenger (1905), Manaças (1955), Chippaux (2006).

***Prosymna meleagris* (Reinhardt, 1843)**
Localities.– Mansoa.
References.– Monard (1940b).
Remarks.– Broadley (1980) distinguished two populations, *P. m. melagris* and *P. m. greigerti* and intergrades from Senegal. Trape & Mané (2002) list both populations from the Senegal, however later Trape & Mané (2006) ressurrect *P. meleagris* (Reinhardt, 1843) and *P. greigerti* (Mocquard, 1906), and latter species into, *P. g. greigerti* and *P. g. collaris*. On the basis of Monard's description it is not possible to distinguish between the two, hence *P. meleagris* remains listed here. *P. greigerti* must therefore be considered as a potential species of Guinea-Bissau (see below).

***Psammophis elegans* (Shaw, 1802)**
Localities.– Bissau, Bissalanca, Bigimita, Bolama Isl., Farim, Cacine, Catio.
References.– Bocage (1867, 1896a), Ferreira (1902), Manaças (1955), Gardete-Correira (1971–73).

***Psammophis lineatus* (Duméril, Bibron & Duméril, 1854)**
Localities.– Contubo-el, Rio Cacine, Catió, Bafatá, Ponta de Machado, Bissau
References.– Monard (1940b), Loveridge (1940), Manaças (1955), Gardete-Correira (1971–73), Garcia (1991).
Remarks.– The species was previously included in the genus *Dromophis* (also see Chippaux 2006), and relegated to the synonymy of *Psammophis* by Kelly et al. (2008).

***Psammophis phillipsi* (Hallowell, 1844)**
Localities.– Uno Isl., Bubaque Isl.
References.– Naurois (1969), present study.
Remarks.– See *Psammophis sibilans.*

***Psammophis sibilans* (Linnaeus, 1758)**
Localities.– Bissau, Cacheu, Bolama Isl. Isl., Antula, Rio Cacine, Madina Boé, Catió.
References.– Bocage (1866, 1896b), Ferreira (1902), Monard (1940b), Manaças (1955).
Remarks.– According to Kelly et al. (2008) the *Psammophis sibilans* "species complex" remains unresolved, however the authors provisionally distinguish two lineages, the "*phillipsii*" and "*subtaeniatus*" complex.

Leptotyphlopidae
***Myriopholis narirostris* (Peters, 1867)**
Localities.– Ponta de Marques Mano, Bissalanca, Bissau.
References.– Manaças (1955), Gardete-Correira (1971–73).
Remarks.– The originally described *Glauconia debilis* Chabanaud 1918 has been synonymized with *Leptotyphlops narirostris boueti* (Hahn & Wallach 1998). The species was renamed by Adalsteinsson et al. (2009).

Pythonidae
***Python regius* (Shaw, 1802)**
Localities.– Bissau.
References.– Monard (1940b), present study (Fig. 31).

***Python sebae* (Gmelin, 1789)**
Localities.– Ponte Machado, Bissau, Enchalé, Bor, Bijagós archipelago, Cufada, Catió, Bucaré, Imbone Isl., Orango Isl., Soga Isl., Bubaque Isl.
References.– Bocage (1896a), Frade et al. (1946), Garcia (1991), Naurois (1969), Broadley (1984), Limoges & Robillard (1991b), Chippaux (2006), present study.

Typhlopidae
***Afrotyphlops punctatus* (Leach, 1819)**
Localities.– Ponta de Machado, Bissau, Bolama Isl. Isl., Rio Cacine, Cacheu.
References.– Bocage (1896a), Ferreira (1902), Boulenger (1905), Manaças (1955).
Remarks.– *Typhlops punctatus* was renamed by Broadley & Wallach (2009).

Viperidae
***Bitis arietans* (Merrem, 1820)**
Localities.– Bolama Isl., Antula, Bissau, Bubaque Isl., Orango Isl., Soga Isl.
References.– Bocage (1896a), Ferreira (1902), Manaças (1981), present study.

***Bitis nasicornis* (Shaw, 1802)**
Localities.– Bubaque Isl.
References.– Naurois (1969).

***Causus maculatus* (Hallowell, 1842)**
Localities.– Cacheu, Contubo-el, Rio Cacine.
References.– Manaças (1981), present study (ZFMK 88323).

Crocodylidae
***Crocodylus suchus* Geoffroy, 1807**
Localities.– Rio Geba, Corubal e Cacheu; Contubo-el, Bolama Isl., Nhacra, Orango Isl., Formosa Isl., Imbone Isl., Uno Isl.
References.– Limoges (1989), Limoges & Robillard (1991b), present study.

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***Mecistops cataphractus* (Cuvier, 1825)**
Localities.– Rio Cacheu?, Rio Corubal, Cacine.
References.– Garcia (1991), de Buffrenil (1993).

***Osteolaemus tetraspis* Cope, 1861**
Localities.– Antula, Madina do Boé, Formosa, Orango.
References.– Monard (1940b), de Buffrenil (1993), Limoges (1989).

APPENDIX 2

Previously recognized, but now doubtful records from Guinea-Bissau

Arthroleptidae
***Arthroleptis variabilis* Matschie, 1893**
Localities.– Guinea-Bissau.
References.– Manaças (1949, 1950).
Remarks.- According to Rödel & Bangoura (2004) the species is confined to central Africa.

***Leptopelis cynnamomeus* (Bocage, 1893)**
Localities.– Bolama Isl.
References.– Bocage (1896a).
Remarks.– The species' northern range limit is in the Democratic Republic Congo; according to Perret (1976) the paratypes of *L. cynnamomeus* from Guinea-Bissau are referable to *L. viridis*.

Hyperoliidae
***Hyperolius argus* Peters, 1854**
Localities.– Ponta de Marques Mano, Bolama Isl.
References.– Monard (1938), Manaças (1949, 1950).
Remarks.– Listed as *H. cinctiventris* Cope; *H. argus* is geographically confined to eastern Africa (Frost 2011), hence the orginal *H. cinctiventris* reflects a synonym (at this stage unknown) of a congener native to Guinea-Bissau.

***Hyperolius ferreirai* Noble, 1924**
Localities.– Ponta de Marques Mano, Bissalanca, Caionete, Caió, Contubo-el.
References.– Monard (1940a), Manaças (1949, 1950).
Remarks.– The species appears to be confined to Angola (Frost 2011), hence *H. ferreirai* reflects a synonym (at this stage unknown) of a congener native to Guinea-Bissau.

***Hyperolius marmoratus* Rapp, 1842**
Localities.– Bolama Isl., Geba.
References.– Bocage (1896a), Monard (1940a), Manaças (1949, 1950).
Remarks.– The species appears to be confined to eastern and southern Africa (Frost 2011), hence *H. ferreirai* reflects a synonym (at this stage unknown) of a congener native to Guinea-Bissau. However the taxonomic status of this species complex remains highly distorted and controversial.

Gerrhosauridae
***Gerrhosaurus nigrolineatus* Hallowell, 1857**
Localities.– Bolama Isl.
References.– Ferreira (1902).
Remarks.– Hallowell (1857) describes the species from Gabon, and Pauwels & David (2008) confirm the species for Gabon. The record from Bolama Isl. remains doubtful.

Scincidae
***Chioninia delalandii* (Duméril & Bibron, 1839)**
Localities.– Garcia (1991) mentions "Só se encontra mencionada nas obras de Bocage, vinda de Bissau, no litoral da Guiné", which indicates that "the species was only recorded, as was reported in the studies of Bocage, upon arrival in Bissau in coastal Guinea-Bissau" (Garcia 1991). However, Bocage (1867) lists the species "*Euprepres delalandii*" from the Cape Verde Islands.
References.– Bocage (1867), Garcia (1991).

Lamprophiidae
***Gonionotophis brussauxi* (Mocquard, 1889)**
Localities.– Guinea-Bissau.
References.– Villiers (1963, 1975).
Remarks.– The species is geographically confined to Cameroon, Republic of the Congo and Gabon (Chippaux 2006, Pauwels et al. 2006). A doubtful record for *G. brussauxi* in Togo is indicated by Chippaux (2006), which may in fact refer to *G. klingi*. A record for Guinea-Bissau at this stage must be considered doubtful.

***Lycophidion meleagris* Boulenger, 1893**
Localities.– Guinea-Bissau.
References.– Gardete-Correira (1971–73), Garcia (1991).
Remarks.– Garcia (1991) mentions *L. horstocki* and *L. gambensis* as synonyms of *L. meleagris*. Former is recognized as a synonym of *L. albomaculatum* and *L. capense* while latter synonyms could not be traced. The most northern record of a West African congener, *L. nigromaculatum* (Peters, 1863) is southeastern Guinea (Chippaux 2006). At this stage it is not possible to ascertain the validity of this species.

Viperidae
***Causus rhombeatus* (Lichtenstein, 1823)**
Localities.– Cacheu, Contubo-el, Bissau, Rio Cacine.
References.– Bocage (1896a), Monard (1940b).
Remarks.– This record very likely reflects *C. maculatus*, based on the number of ventrals (137) as indicated by Monard (1940b); in *C. rhombeatus* ventrals count more than 150 (Chippaux, 2006).

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Parenti RP (2008) A phylogenetic analysis and taxonomic revision of ricefishes, *Oryzias* and relatives (Beloniformes, Adrianichthyidae). Zoological Journal of the Linnean Society 154: 494–610

Sullivan J (1994) *Bufo boreas*. In: Fire Effects Information System (U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory). Online at http://www.fs.fed.us/database/feis/animals/amphibian/bubo/all.html last accessed on December 28, 2009

Sztencel-Jablonka A, Jones G, Bogdanowicz W (2009) Skull morphology of two cryptic bat species: *Pipistrellus pipistrellus* and *P. pygmaeus* – a 3D geometric morphometrics approach with landmark reconstruction. Acta Chiropterologica 11: 113–126

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